

**CECO**

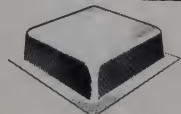
# CURTAINWALLS



**CECO STEEL PRODUCTS CORPORATION**



## INTERRELATED BUILDING PRODUCTS



*Steelforms for  
Reinforced  
Concrete Joist  
Construction*



*Concrete  
Reinforcing  
Bars*



*Welded Wire  
Fabric*

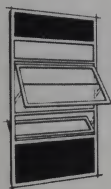
*Open-Web Steel  
Joists*

*Steel  
Truss-Beams*



*Steel Roof  
Deck*

*Corrugated  
Hard-Tempered  
Centering*



*Steel and  
Aluminum  
Windows*

*Steel and  
Aluminum  
Curtainwalls*

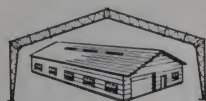
*Metal-Frame  
Screens*



*Hollow-Metal  
Doors*

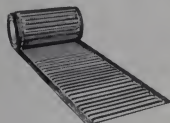
*Interior  
Residential  
Swing and  
Closet Doors*

*Metal Lathing  
Products*



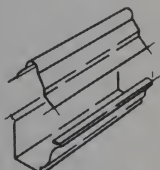
*Steel Building  
Components*

*Cecoroll  
Corrugated  
Steel Roofing*



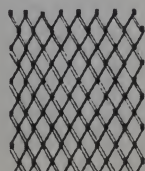
*Double-Drain  
Corrugated  
Steel Roofing*

*Steel  
Corrugated and  
Flat Sheets*



*Steel Roofing  
Accessories*

*Rain Carrying  
Goods*



*Erection Service  
for Windows—  
Curtainwalls—  
Screens—  
Doors—  
Steelforms—*

## ABOUT

# CECO

## STEEL PRODUCTS CORPORATION

By successfully serving the construction industry, Ceco has consistently grown in size and product reputation from its modest start a half century ago. The company attributes its advancement to dedication to these objectives:

- To research and develop the best-engineered building components attainable,
- To help architects, engineers and contractors, by providing qualified experience, knowledge and services,
- To manufacture only high quality products,
- To earn customers' satisfaction and goodwill,
- To build reliability all the way from melting metal to erecting finished components, and . . .
- To market all products at fair prices.

## FACILITIES and RESPONSIBILITY

Engineered building components and related services are the company's only business. All Ceco plants are engaged exclusively in the manufacture of metal products for the construction industry alone.

Ceco's control, and accompanying responsibility, extends from original steel and aluminum melting through engineering, fabrication and delivery to the project.

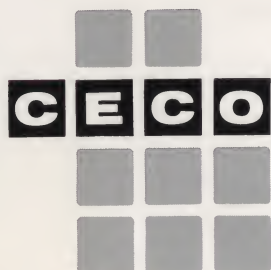
Because of its integrated operation of complete facilities, the company is accountable and responsible all the way for:

- Reliable* ENGINEERING
- Quality* PRODUCTION
- Dependable* DELIVERY and ERECTION

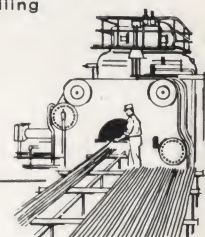
Manufacturing facilities have been expanded constantly to provide adequate production for customers coast-to-coast.

Ceco's Ochiltree Works is one of the country's most modern bar rolling mills, fully automated and a model of advanced engineering. The net to customers is uniform quality in raw material, and reliable delivery from balanced inventories. The company operates 14 strategically located plants, and maintains 19 warehouses to assure prompt delivery to any project location.

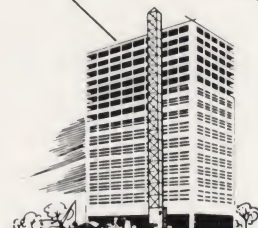
## ALL-THE-WAY CONTROL IN CECO'S HANDS



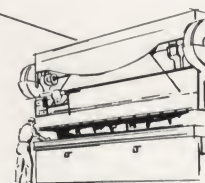
STEEL melting  
and rolling



ALUMINUM casting  
and extruding



EXPERT ERECTION  
on the project



FABRICATING of  
building products



## DESIGN and CONSTRUCTION FEATURES

### CONSTRUCTION

Construction details in this catalog show typical panel arrangements, ventilating areas, and fixed window variations obtainable with Ceco aluminum and steel sections, which are standard and readily available.

Almost limitless treatments of vertical and horizontal sightlines are obtainable from Ceco's standardized components and structural members.

Mullions are constructed to carry the weight of the curtainwall system as well as withstand wind loads of either 15 p.s.f., or 20 p.s.f. as specified. Especially important are the time-tested design and construction allowances for expansion, contraction, caulking, flashing, and provisions for drainage of condensation.

### MATERIAL

All principal sections of aluminum curtainwalls are extruded from aluminum alloy 6063-T5, having a tensile strength of not less than 22,000 p.s.i.

All sections of steel curtainwalls are fabricated from hot rolled new billet steel.

### WEATHERSTRIPPING

In aluminum curtainwall systems, Double-hung windows have full weatherstripping. Projected and Casement windows are available either with or without weatherstripping, as specified.

In steel curtainwall systems, window frame and ventilator sections have integral weathering baffles to provide double-contact surfaces around the perimeter of ventilators.

### HARDWARE

Rugged, easy-operating window hardware is securely attached. Handles, latches locks, rings, push-bar and roto operating hardware are white bronze for aluminum or red bronze for steel.

### PANELS

Porcelain Steel Panels, of the box or laminated type, are manufactured in accordance with current specifications of the Porcelain Enamel Institute.

Ceramic Tile Panels are laminated construction.

Aluminum Panels with Alumilited aluminum exterior face can be furnished, when specified.

### FINISH and PROTECTIVE COATING

Aluminum Curtainwall windows, frames, mullions, mullion covers, etc. are thoroughly cleaned, caustic etched, and coated with a clear methacrylate lacquer. Alumilite finishes (204R1 or 215R1) are furnished, when specified. Ceco's own Alumiliting facilities are exceptionally modern and capable of handling complete assemblies up to 26-ft. in length.

All steel units (excepting insulating panels) are treated with Bonderite and receive one coat of gray prime paint, baked at 300°F. for not less than one-half hour.

### ERECTION

Curtainwalls are erected by Ceco or their authorized representatives in accordance with approved drawings. Curtainwalls are set plumb, square, level, and secured in correct vertical and horizontal alignment. Joints between curtainwall and its components are sealed with approved caulking compound furnished and applied by the erector.



*Wilson Elm School, Summit, New Jersey  
David Ludlow—Jean Kuhn Associate, architects  
J. M. Straus and Company, contractor*

For aluminum window data, see separate Ceco catalog #6013-J in Sweet's section 17a/Ce.  
For steel window data, see separate Ceco catalog #1001-S in Sweet's section 17b/Ce.  
For steel residential windows, see separate Ceco catalog #1054.  
For aluminum residential windows, see separate Ceco catalog #6054.

### catalog contents

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## CURTAINWALL DATA

**GENERAL**—Installation details shown in this booklet are typical of panel arrangements, ventilating areas and fixed windows in Ceco Engineered Curtainwalls. Many variations are possible, using the same Ceco aluminum extrusions and steel sections, which are all basic and available now. Ceco Engineers have had long experience in the detailing of curtainwall construction. They are qualified to translate the architect's design into the practical "skin", and offer their experience for the convenience of architects coast to coast.

Almost limitless dramatic effects are possible with this type of construction. A larger variety of panels, arrangements, sightlines and finishes is available to the architect from Ceco than from any other one source. Ceco Engineering makes erection fast and simple. Deadweight is low, with consequent savings in beams, columns and footings.

Mullions are designed with safe load carrying factors determined through Ceco experience. Especially important is proper allowance for expansion and contraction, caulking, proper flashing and provision for drainage of condensation.

Ceco Engineers in the field and at the general offices constitute a working team of great value to the curtainwall designer. These experts are at your service, as close as your nearest telephone. You incur no obligation in consulting with them. So please feel free to call them in when you require further technical data.

Our work includes furnishing proposal and shop drawings, manufacture of the windows, responsibility for and furnishing of the insulated panels, installation details and erection. Further information will be gladly given on any phase of this work. Detailed specifications are on pages 40 and 41.

**DETAILS ON PAGES 6-7-8**—The vertical mullions of this multi-story application of Aluminum Projected Windows are anchored to the structural steel at each floor. Windows are individually suspended from the mullions. Mullions carry the deadload of the windows and the wind load. Plaster ceilings return to the window, but are not connected. An extruded tube with integral stem (T-tube mullion) provides a vertical shadow line. This curtainwall system is designed to provide for expansion and contraction, with weathertight connections, and to compensate for nominal building tolerances. An extruded sill section covers the masonry.

**DETAILS ON PAGE 9**—Here is a simple single story application of Aluminum Projected Windows. The curtainwall is anchored at the head and sill. There is a drop ceiling with an insulated panel covering the structural members. This is standard window construction. Note the strong, simple mullion and cover (detail 8), and also the alternate mullion (detail 9). Another feature is the simplicity with which subsills may be applied to suit various masonry conditions. An insulated panel from floor to sill level conceals convectors, pipes, etc. from outside view.

**DETAILS ON PAGES 10-11-12**—This multi-story Aluminum Grid-type Curtainwall system lends itself well to 2 or 3 story construction where large light areas or panels are desirable. Panels are installed from the exterior directly into the Grid-type Curtainwall frame. Dead loads can be carried on each floor, as illustrated, or stacked and anchored on the bottom slab. Anchorage can be made to the top, face or bottom of the concrete slab or structural beam. Grid units are simply and effectively joined with special "H" type extrusions.

**DETAILS ON PAGE 13**—This is a single story detail, featuring Aluminum extruded sections for Grid-type Curtainwall construction. This type of construction affords the architect heavy vertical and horizontal sightlines for a specific architectural effect, and, if desired, can provide large unbroken areas of glass or insulated panels. The Grid-type Curtainwall is generally anchored directly to the concrete slab with special type anchors, as shown.

**DETAILS ON PAGES 14-15**—This multi-story typical application of Casement windows shows how vertical mullions are anchored at each floor. Casements are individually suspended from mullions that carry both window and wind loads.

**DETAILS ON PAGE 16**—Here you see a single story system with 200-B Monumental Double-hung Windows constructed to receive insulated panels above and below the sliding sash. This is standard construction except for the panel framing.

**DETAILS ON PAGES 17-18-19-20-21**—Series 160 Double-hung, intermediate weight aluminum windows are shown with installation details for typical curtainwall construction for one-story and multi-story buildings. Combinations of Double-hung and fixed windows may be used in most any arrangement. Slewing mullions are an integral part of each window, thus adjacent units are bolted together for fast, easy and low cost installation.

Series 165 Single-hung, intermediate weight windows, particularly adaptable to low-rise buildings are also available. They lend themselves to the same treatment as for Series 160 Double-hung windows.

**DETAILS ON PAGES 28-29-30**—This is another multi-story design, using 1½" Heavy Intermediate Windows, with the mullions anchored to the structure at each floor. Concrete inserts are to be furnished and built in by the concrete contractor. Windows are suspended from the vertical mullions. In this system, the mullion carries the deadload and wind load. The outer mullion section provides a vertical shadow line. This curtainwall system is designed to provide for expansion and contraction, with weathertight connections, and to compensate for nominal building tolerances.

**DETAILS ON PAGE 31**—This is a single story detail with 1½" Heavy-Intermediate steel sections featuring simple window construction and anchored head and sill. It is arranged to receive the insulated panel at the head and to conceal the structural steel. A drop ceiling returns to the window. The insulated panel at the sill conceals convectors, pipes, etc. from outside view.

**DETAILS ON PAGES 32-33**—This 2 or 3 story system is of Steel sub-frame construction. Windows are of 1½" Heavy-Intermediate equal-leg sections. Anchorage is on the underside of the concrete slab. Insulated panels and ventilators are set into portions of the sub-frame. Stationary glass is glazed directly to the sub-frame. This method provides substantial horizontal and vertical lines. Deadload is carried at the first floor sill.

**DETAILS ON PAGE 35**—Here is a single story detail in 1¼" Intermediate steel construction featuring simplicity of design. The units are fastened at the head by use of a continuous anchor supplied by Ceco. A furred ceiling returns to a plaster ground at the window head member. At the sill is an insulated panel concealing heating and storage units from outside view. Variations in depth of sill are accommodated by continuous extruded aluminum sections.

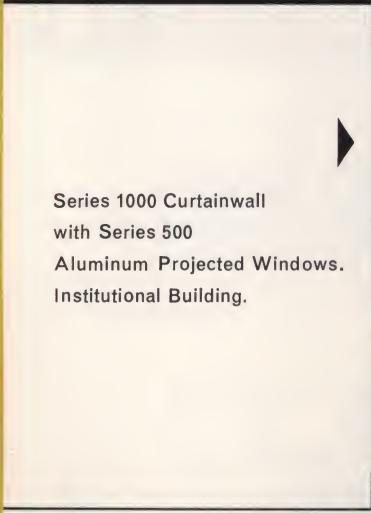




Series 1000  
Curtainwall with  
Fixed Aluminum Windows.  
Porcelain Enamel Panels.  
Commercial Building.



Series 1000 Curtainwall  
with Series 500 Aluminum  
Projected Windows.  
Porcelain Enamel Panels.  
Institutional Building.



Series 1000 Curtainwall  
with Series 500  
Aluminum Projected Windows.  
Institutional Building.



Aluminum Curtainwall  
with Series 530  
Aluminum Projected Windows  
and Split-Tee Steel Mullions.  
Porcelain Enamel Panels.  
Institutional Building.



Aluminum Curtainwall  
with Commercial  
Aluminum Double-hung Windows.  
Porcelainized Aluminum Mullions.  
Porcelain Enamel Panels.  
Institutional Building.



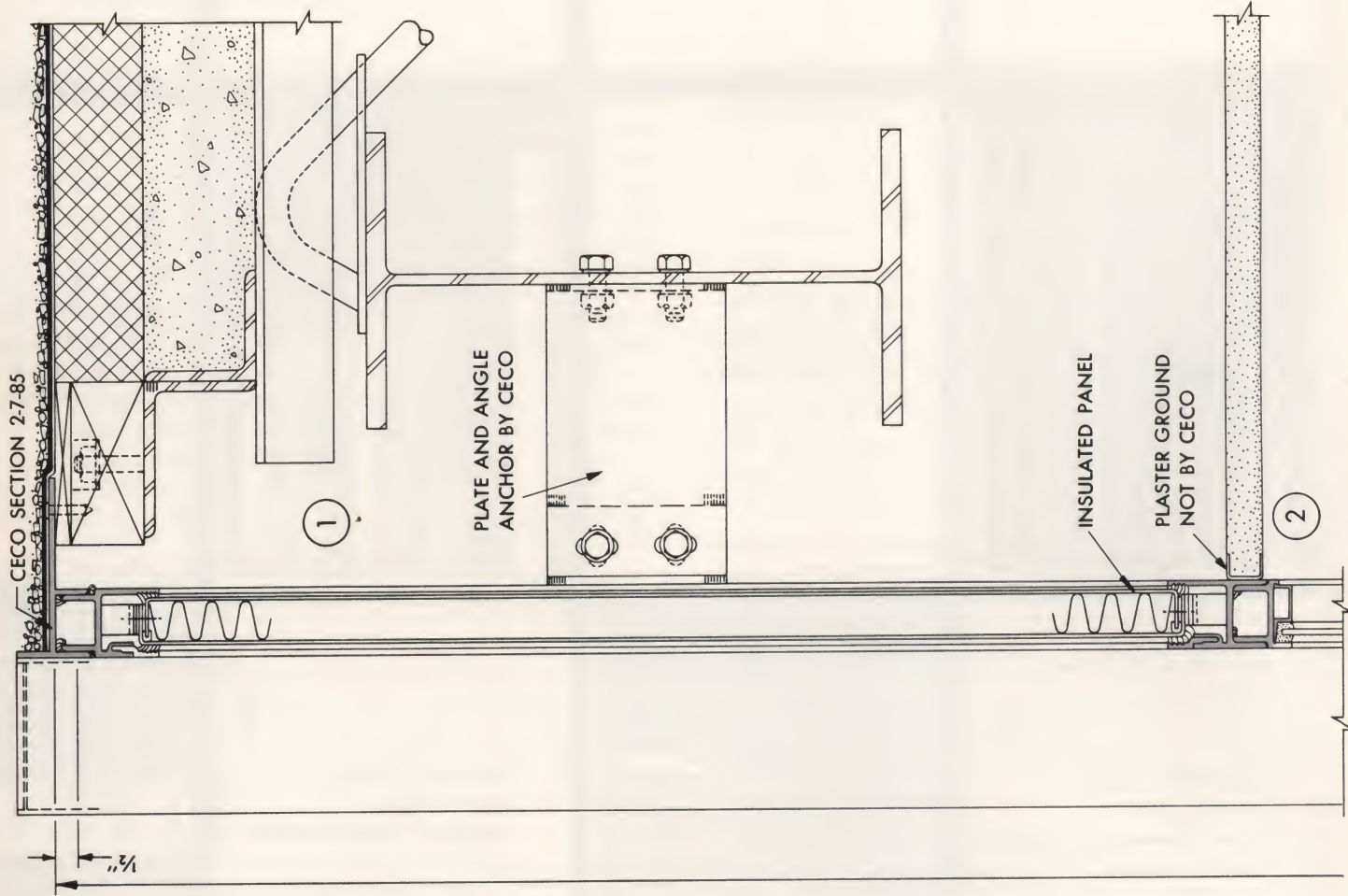
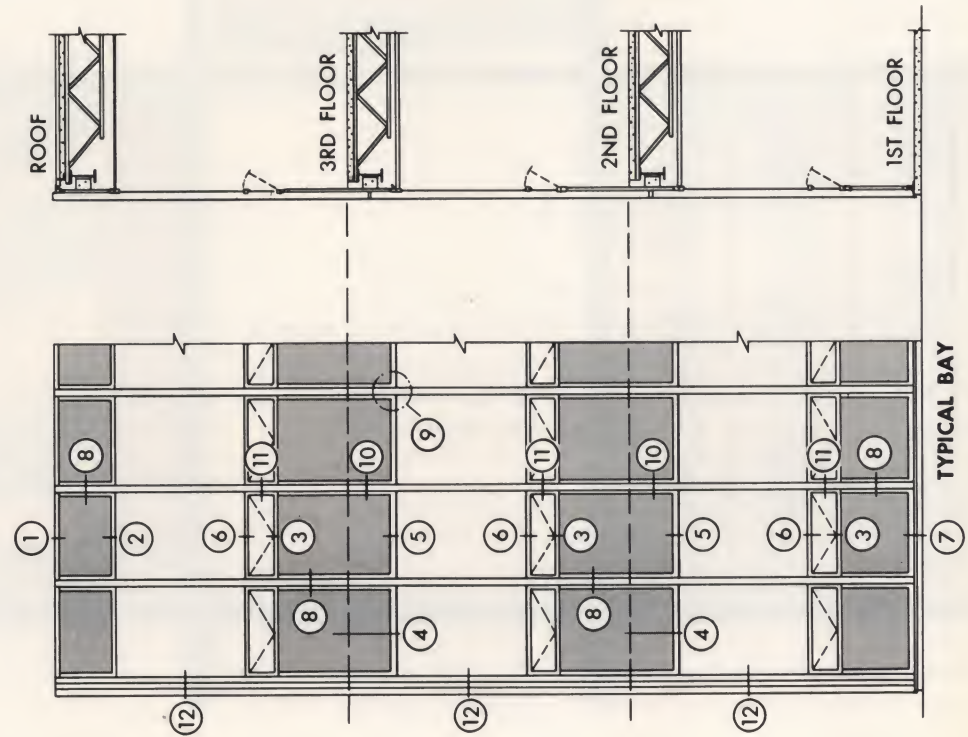
Series 1000  
Curtainwall with  
Fixed Aluminum Windows.  
Porcelain Enamel Panels.  
Commercial Building.

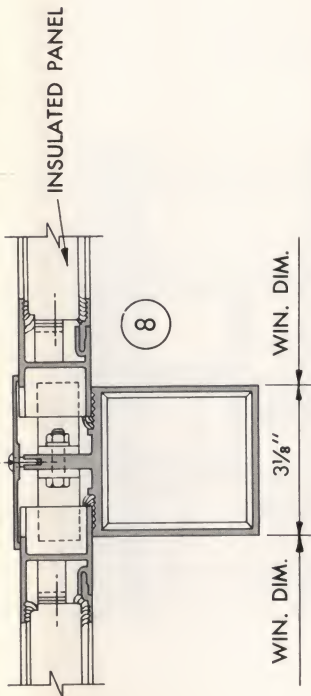


**MULTI-STORY CONSTRUCTION**

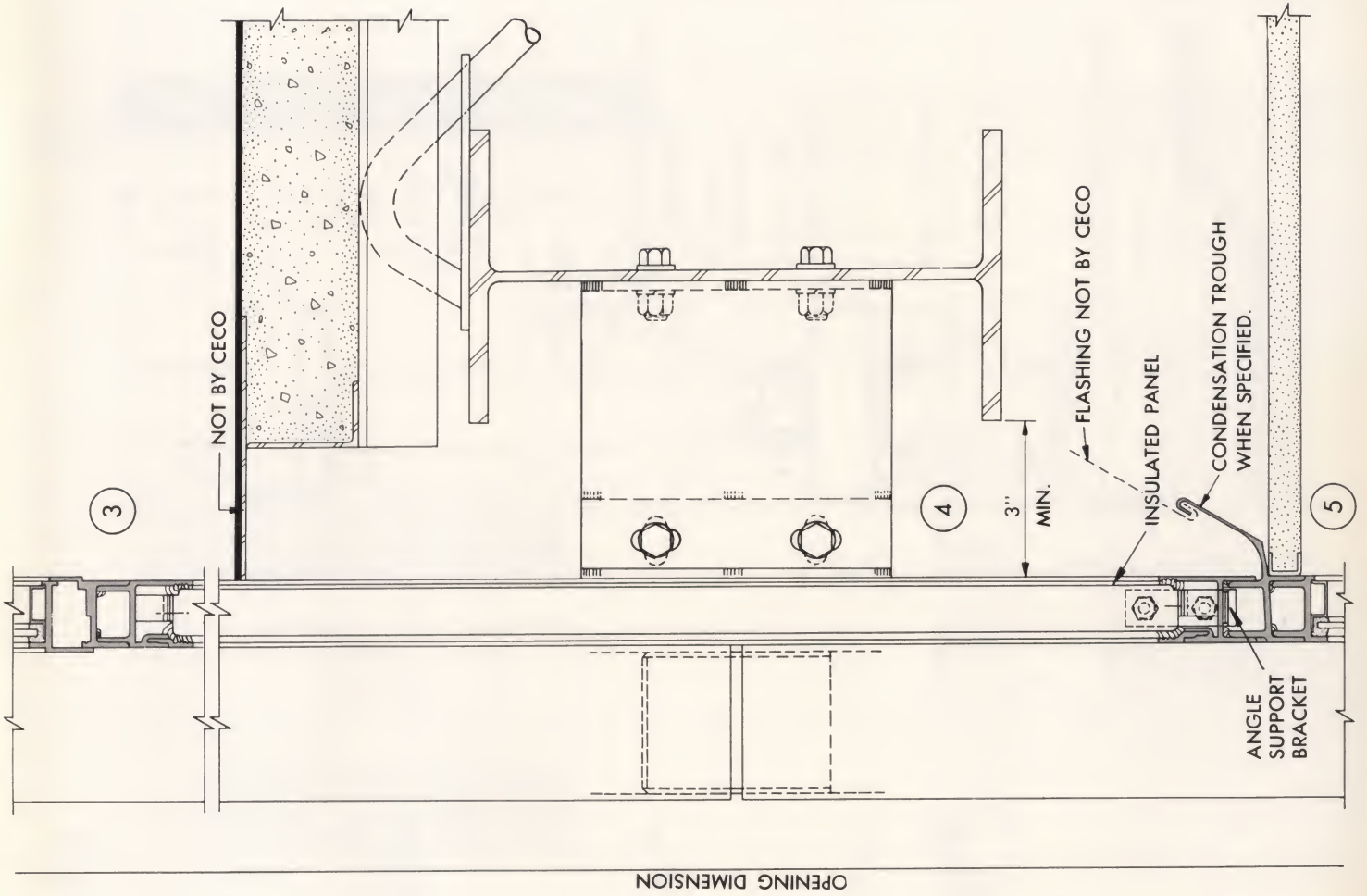
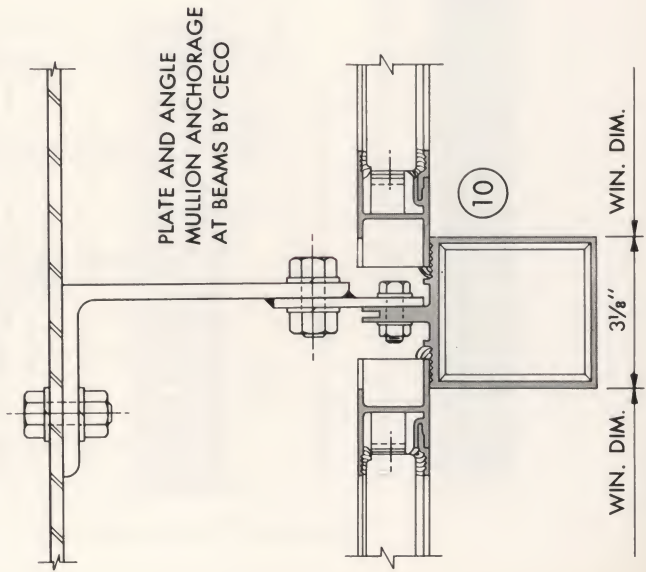
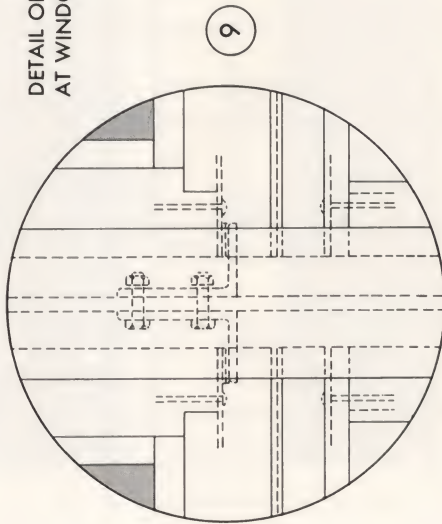
aluminum / projected / series 1000

installation details • quarter-size

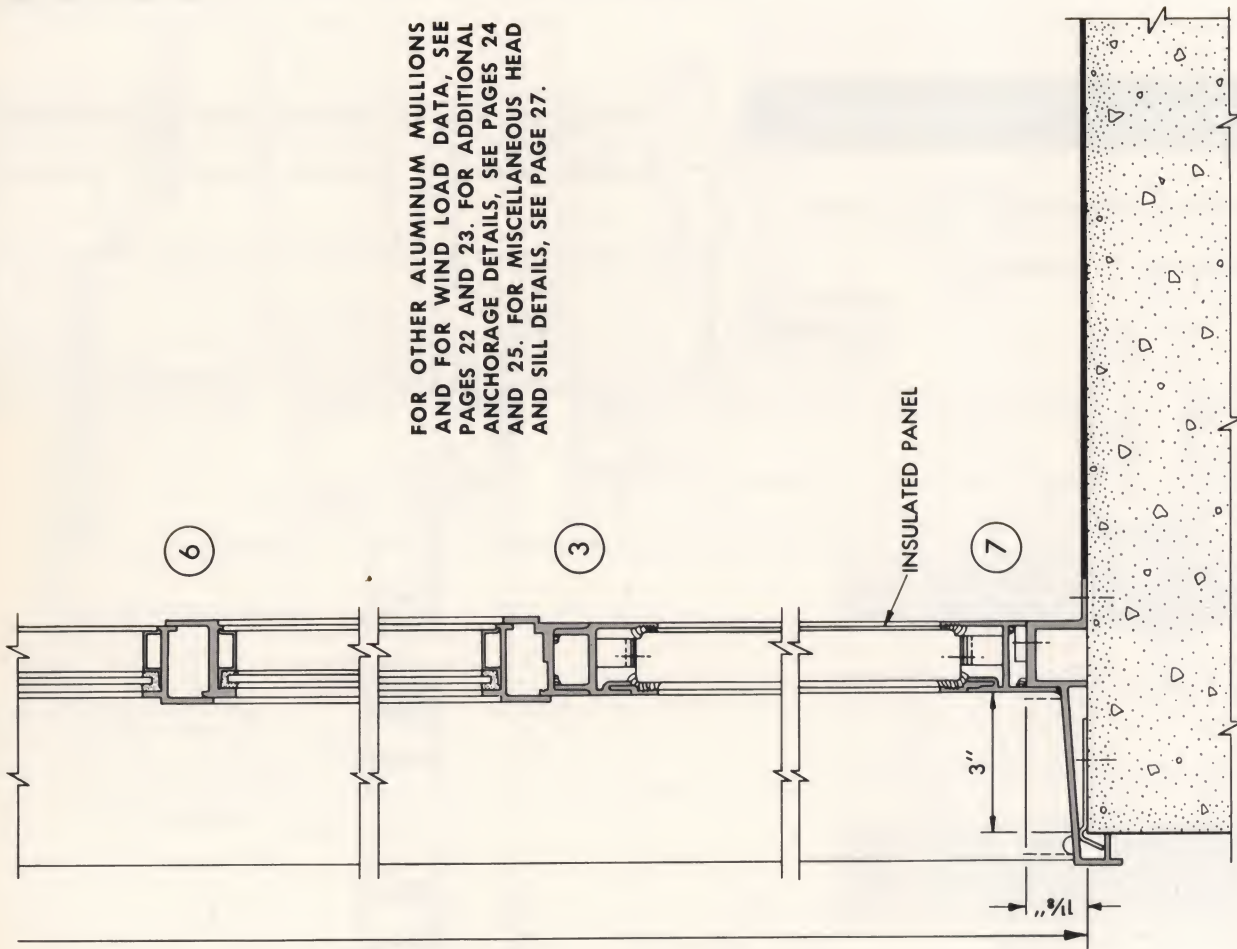




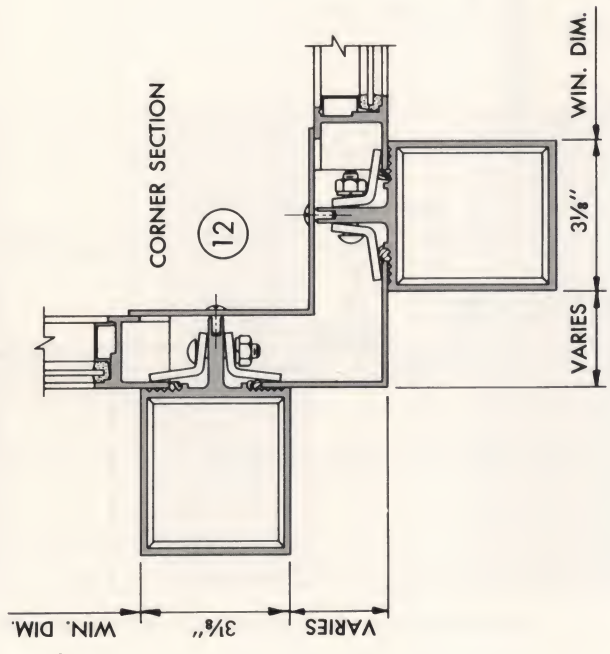
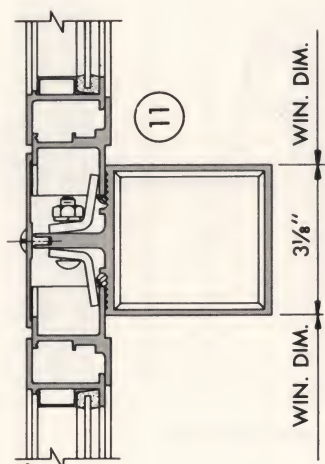
DETAIL OF CLIP ANGLES  
AT WINDOW SLEEVE JOINTS







FOR OTHER ALUMINUM MULLIONS  
AND FOR WIND LOAD DATA, SEE  
PAGES 22 AND 23. FOR ADDITIONAL  
ANCHORAGE DETAILS, SEE PAGES 24  
AND 25. FOR MISCELLANEOUS HEAD  
AND SILL DETAILS, SEE PAGE 27.



Joints exposed to weather must be sealed with an approved caulking compound.



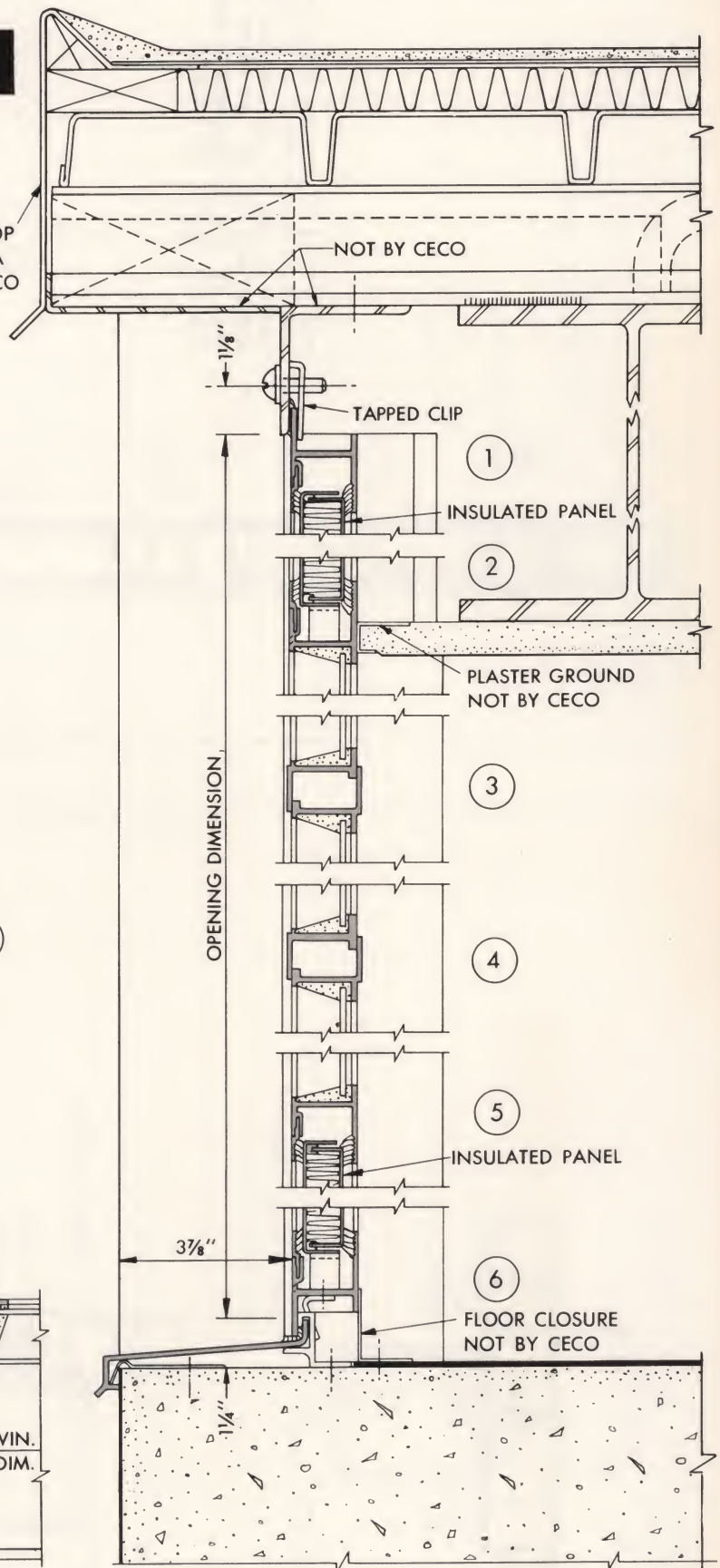
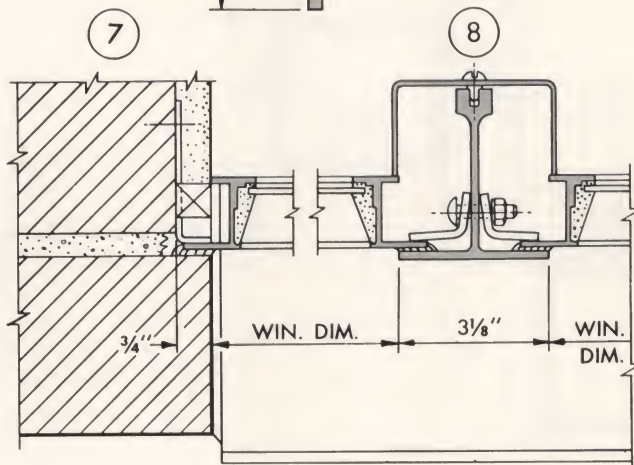
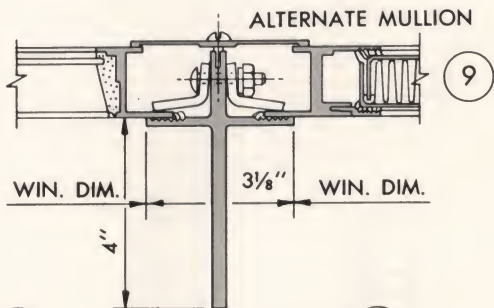
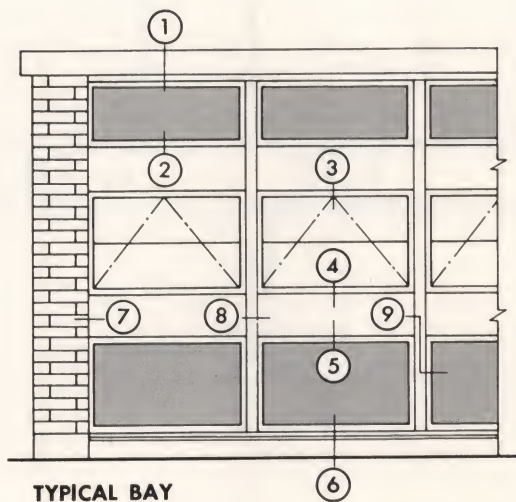
## ONE-STORY CONSTRUCTION

aluminum / projected / series 1000

installation details • quarter-size

GRAVEL STOP  
AND FASCIA  
NOT BY CECO

NOT BY CECO



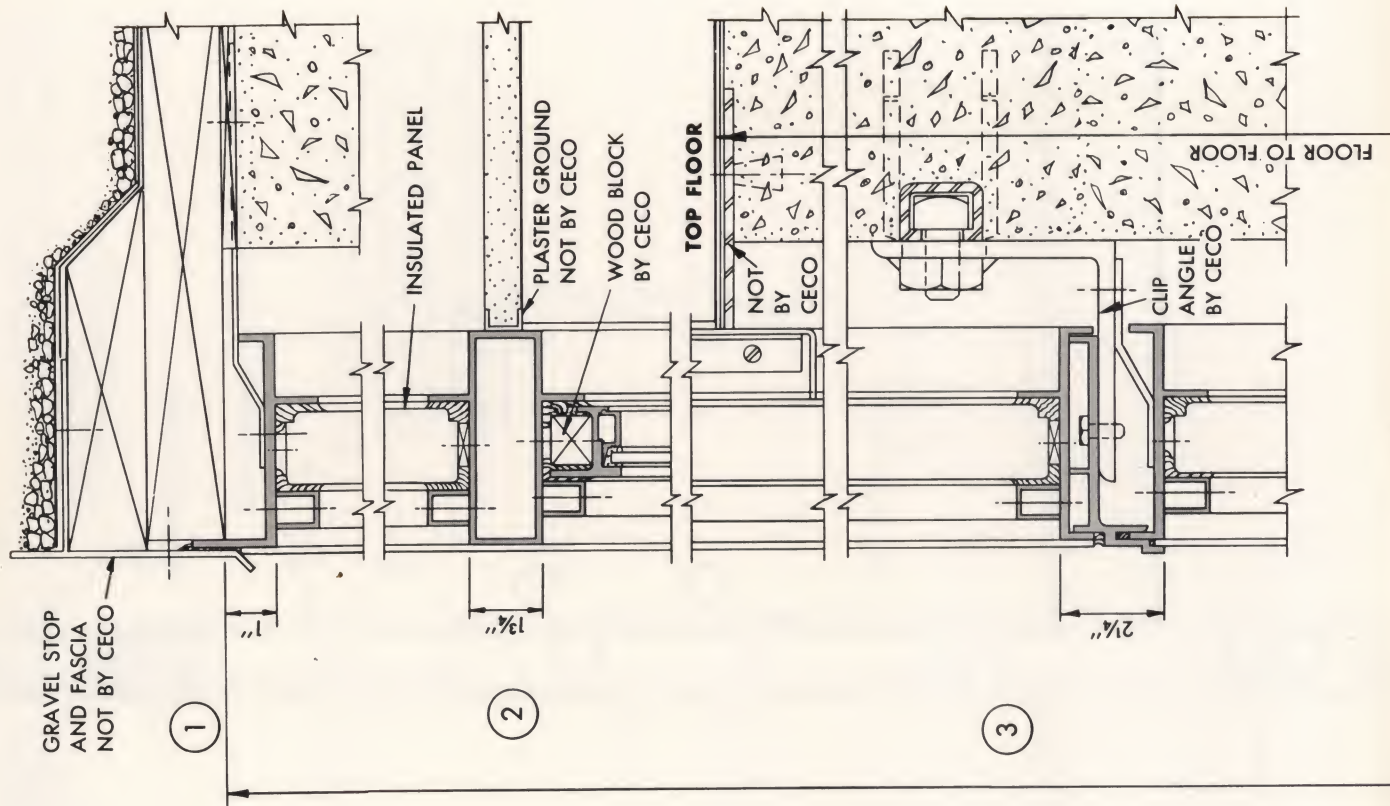
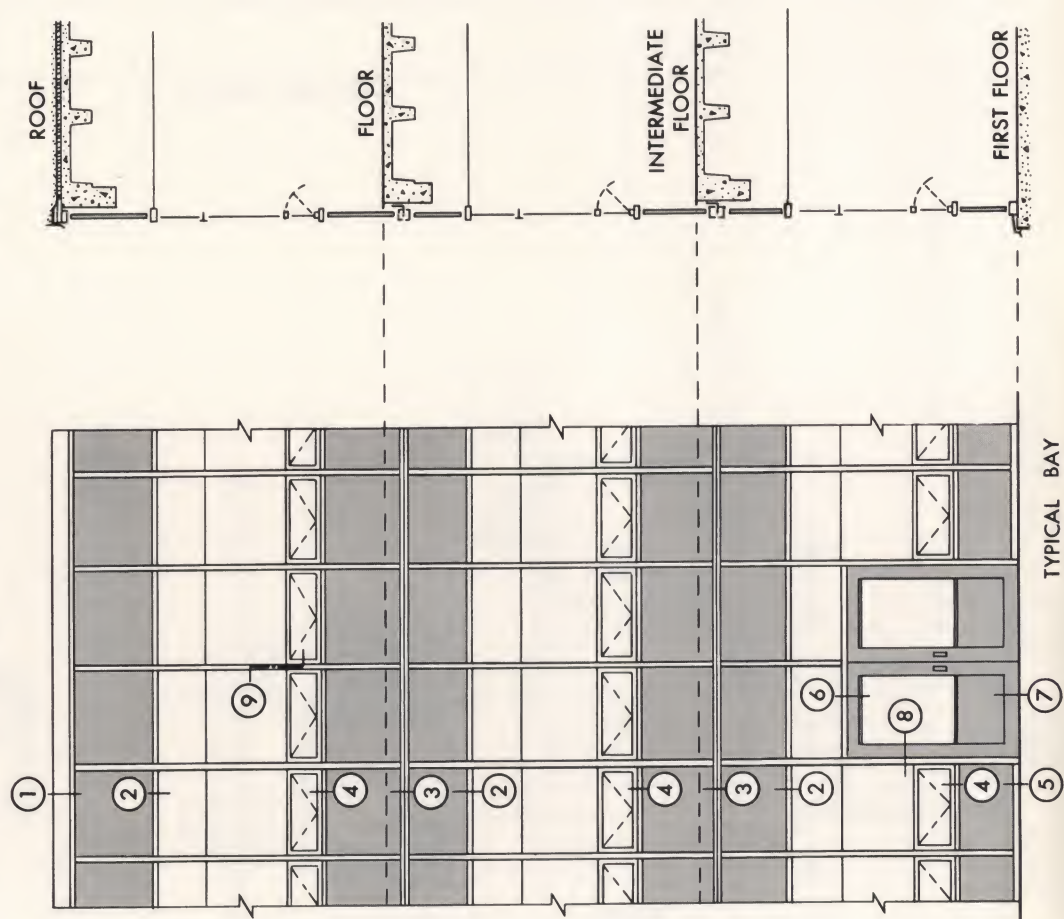
Joints exposed to weather must be sealed with an approved caulking compound.



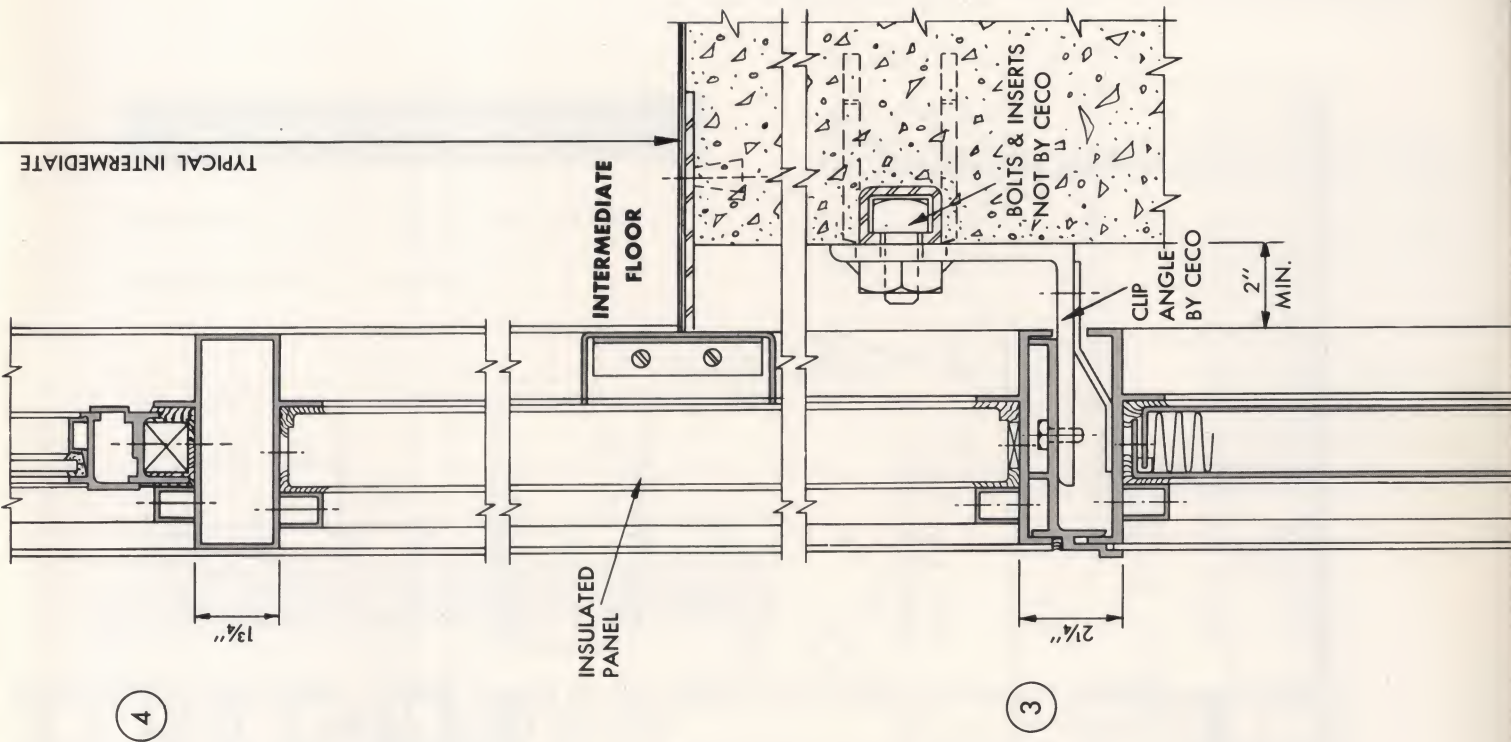
# MULTI-STORY CONSTRUCTION

aluminum / grid-type / series 1100

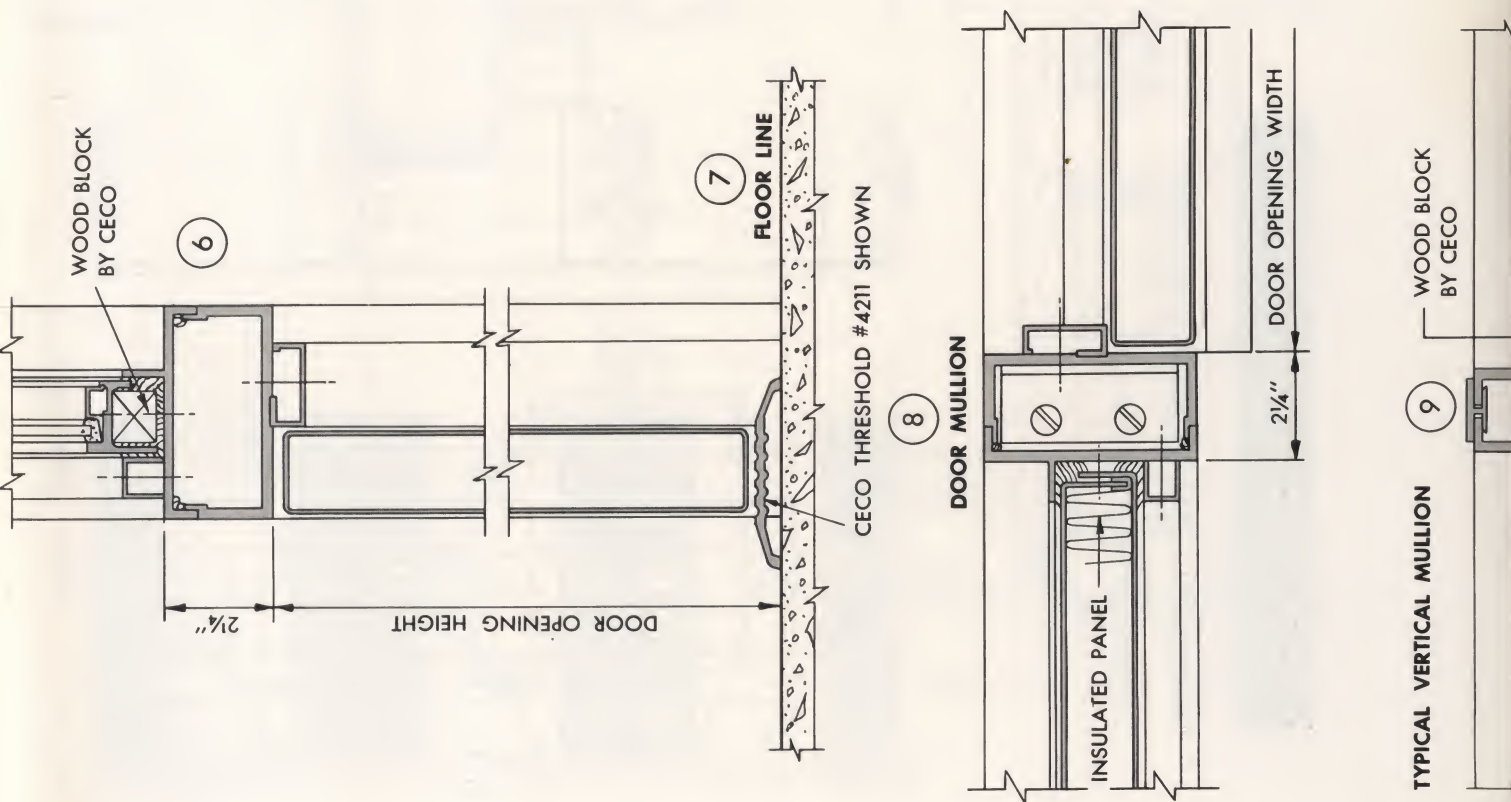
installation details • quarter-size



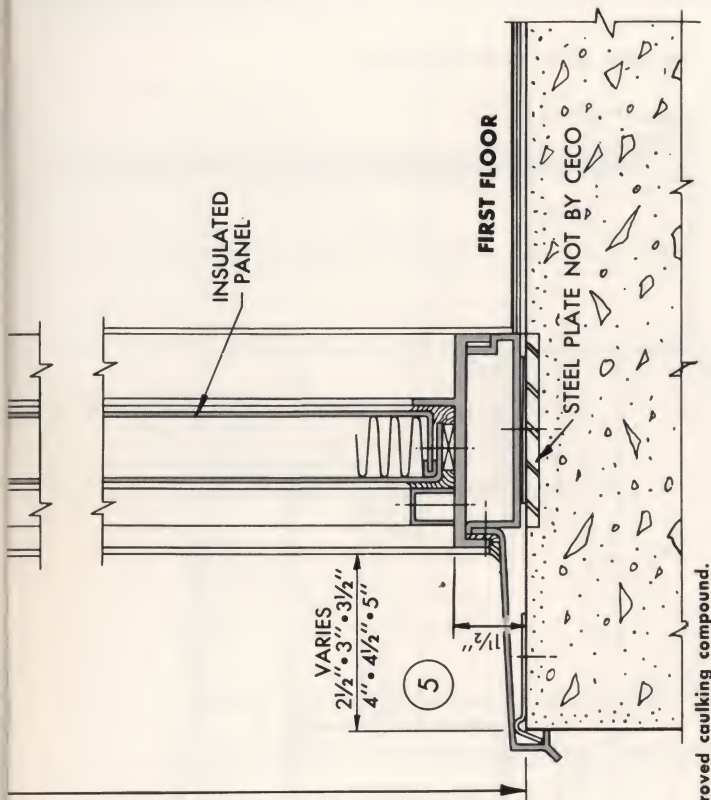
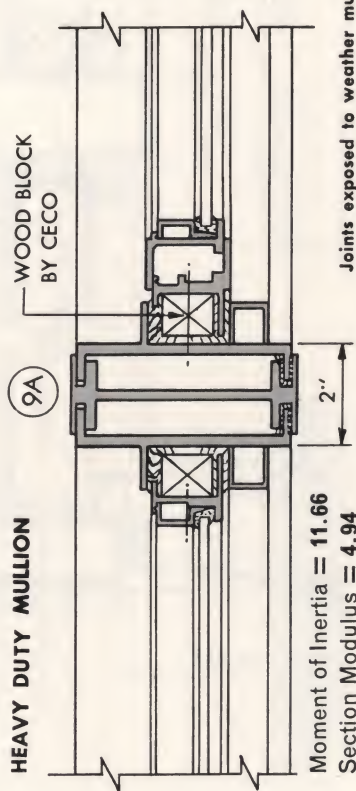
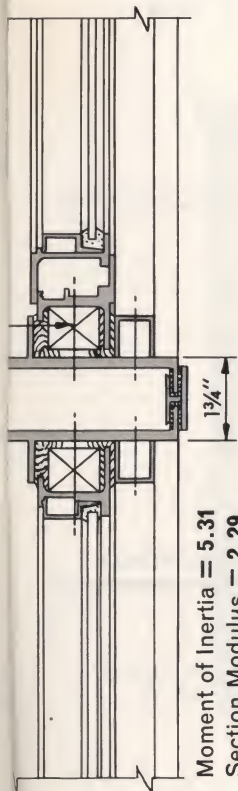




OPENING DIMENSION







		SAFE LIMITS—ALUMINUM MULLIONS—Rectangular Loading											
		15 P.S.F. WIND LOAD						20 P.S.F. WIND LOAD					
W	Ht.	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	12'-6"	13'-0"	13'-6"	14'-0"	14'-6"	15'-0"	15'-6"
5'-6"	I	2.629	3.046	3.499	3.998	4.543	5.135	5.776	6.468	7.214	8.014	8.878	9.806
	S	1.160	1.279	1.404	1.535	1.671	1.813	1.961	2.115	2.274	2.447	2.634	2.834
6'-0"	I	2.868	3.320	3.817	4.362	4.956	5.601	6.301	7.056	7.870	8.744	9.678	10.672
	S	1.266	1.396	1.532	1.674	1.823	1.978	2.139	2.307	2.481	2.661	2.856	3.066
6'-6"	I	3.107	3.597	4.135	4.725	5.369	6.068	6.826	7.644	8.526	9.474	10.492	11.570
	S	1.371	1.512	1.659	1.814	1.975	2.143	2.318	2.499	2.688	2.884	3.096	3.324
7'-0"	I	3.346	3.873	4.453	5.089	5.782	6.535	7.351	8.232	9.181	10.199	11.287	12.445
	S	1.477	1.628	1.789	1.953	2.127	2.308	2.496	2.692	2.895	3.107	3.336	3.582
7'-6"	I	3.585	4.150	4.772	5.452	6.195	7.002	7.876	8.820	9.837	10.919	12.067	13.282
	S	1.582	1.745	1.915	2.093	2.279	2.473	2.674	2.884	3.102	3.336	3.586	3.852
8'-0"	I	3.824	4.427	5.090	5.816	6.608	7.469	8.401	9.408	10.493	11.657	12.899	14.220
	S	1.688	1.861	2.042	2.232	2.431	2.637	2.853	3.076	3.308	3.550	3.802	4.064

For windows 5'-0" in width and under consult Safe Limit Tables on page 22.

FOR OTHER ALUMINUM MULLIONS AND FOR WIND LOAD DATA, SEE PAGES 22 AND 23. FOR ADDITIONAL ANCHORAGE DETAILS, SEE PAGES 24 AND 25. FOR MISCELLANEOUS HEAD AND SILL DETAILS, SEE PAGE 27.

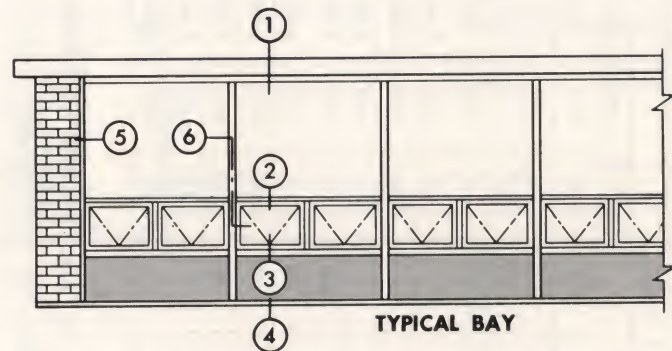


See page 12 for wind load tables

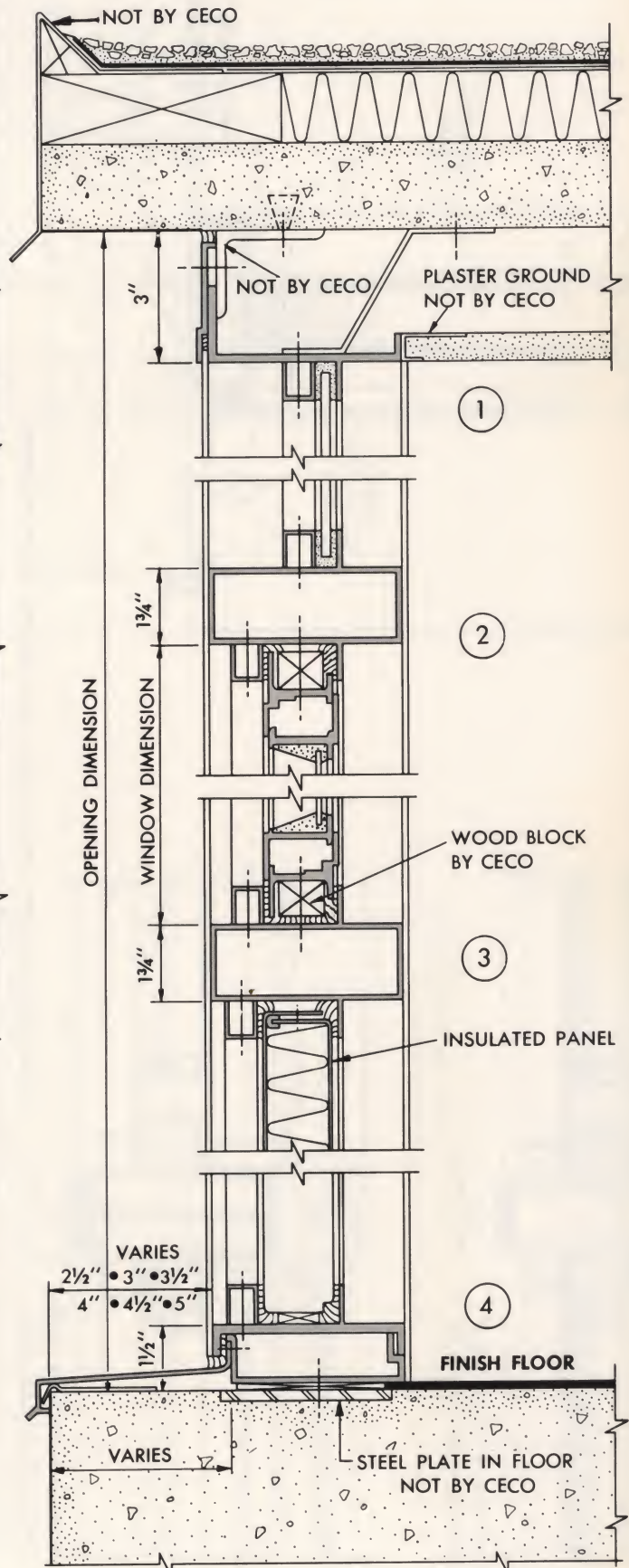
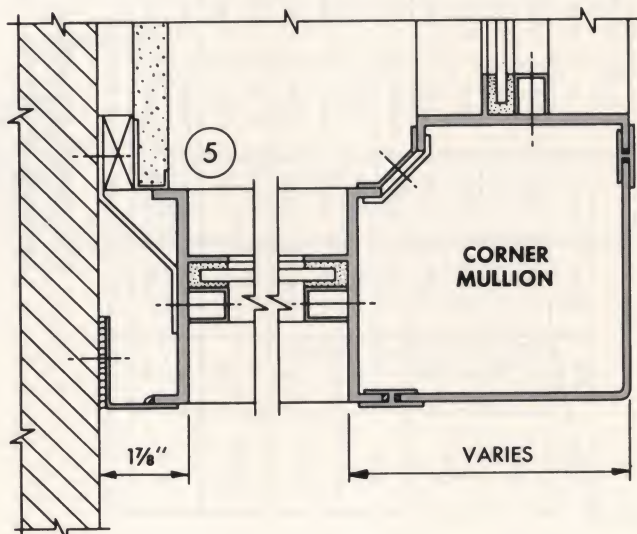
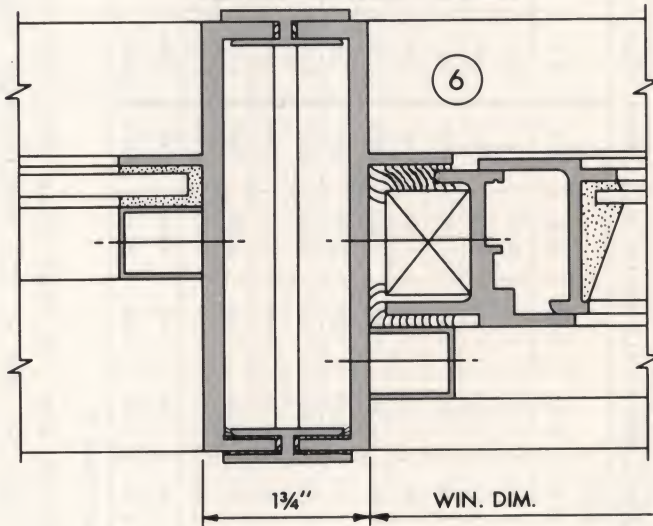
## ONE-STORY CONSTRUCTION

aluminum / grid-type / series 1100

installation details • quarter-size



VERTICAL MULLION • half-size



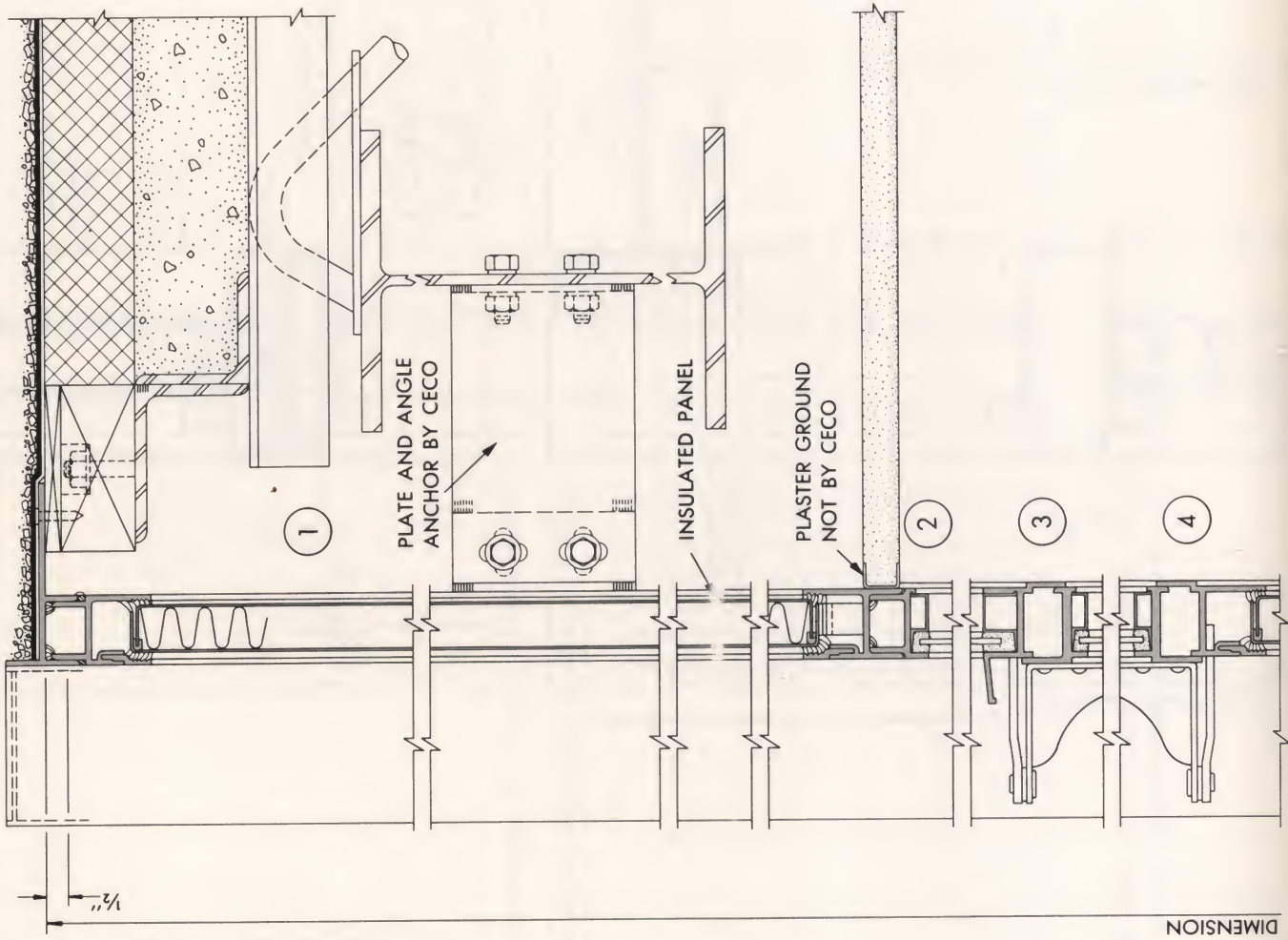
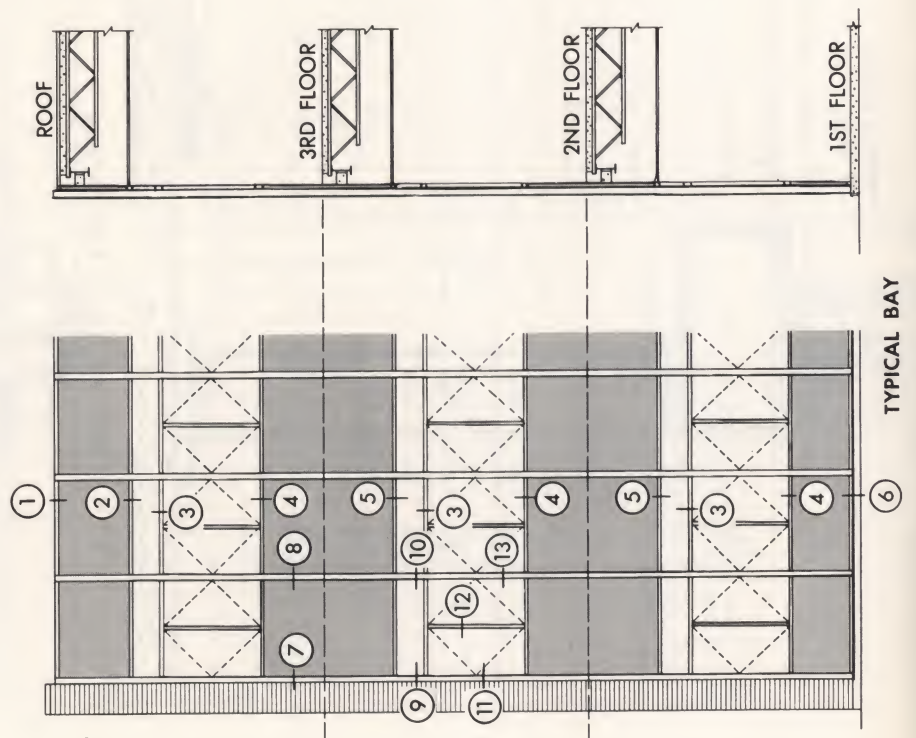
Joints exposed to weather must be sealed with an approved caulking compound.



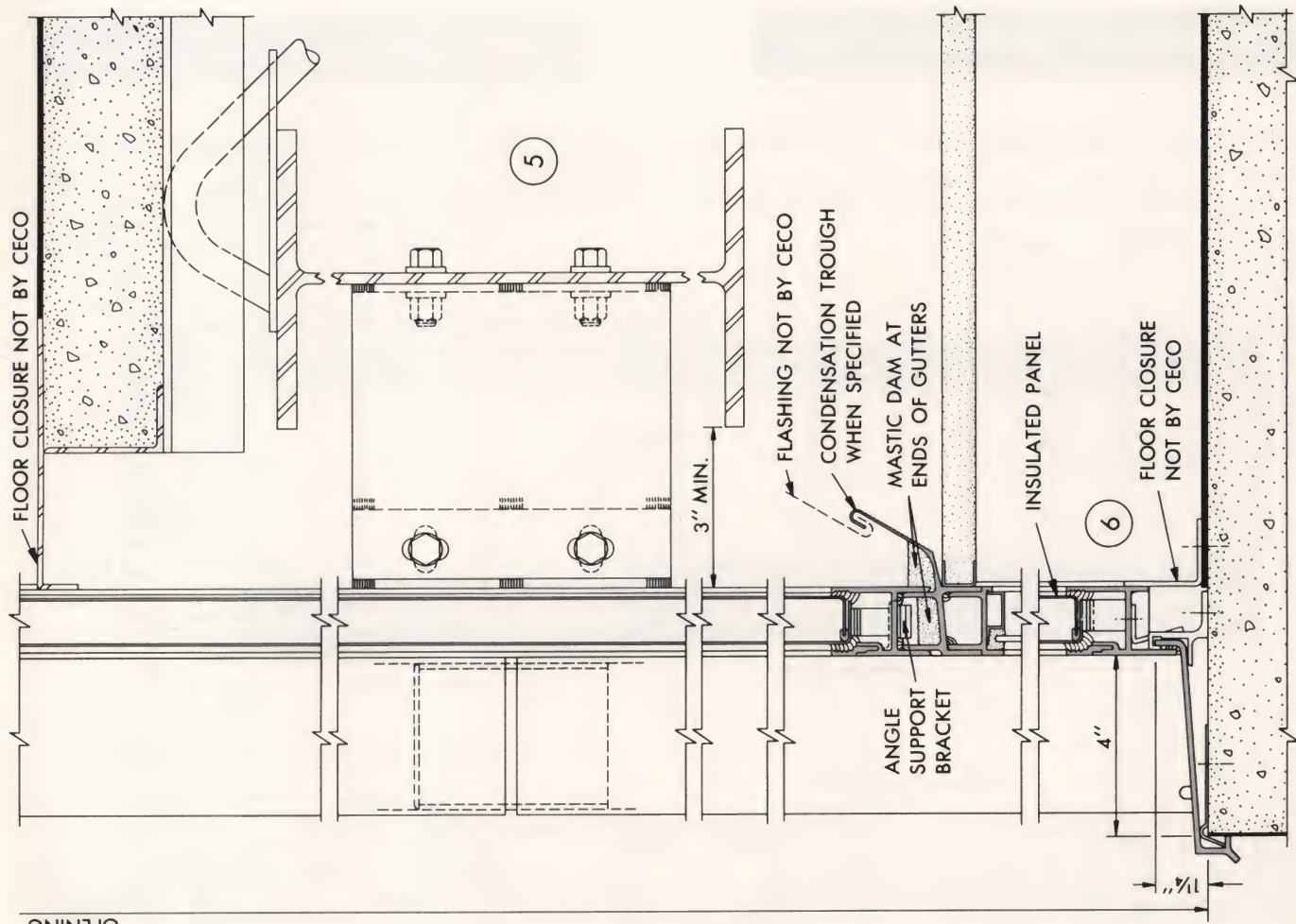
# **MULTI-STORY CONSTRUCTION**

aluminum / casement / series 1000

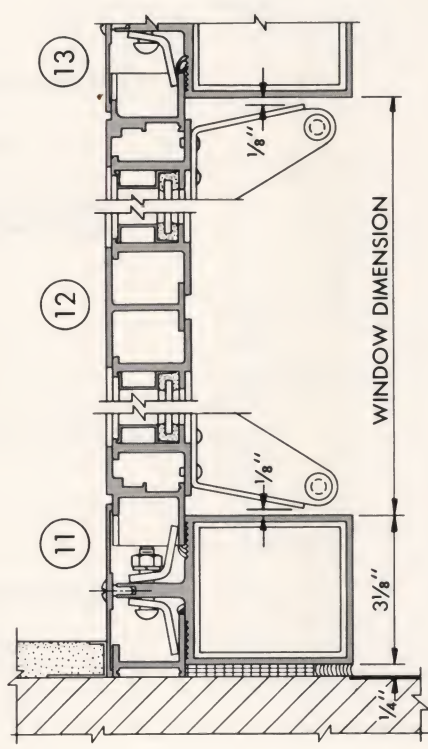
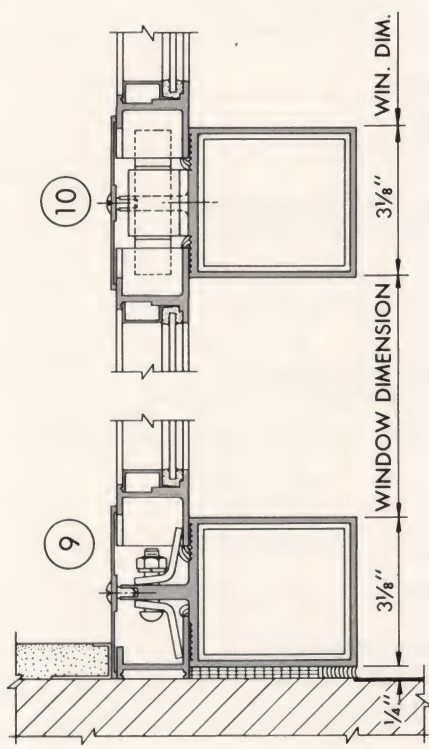
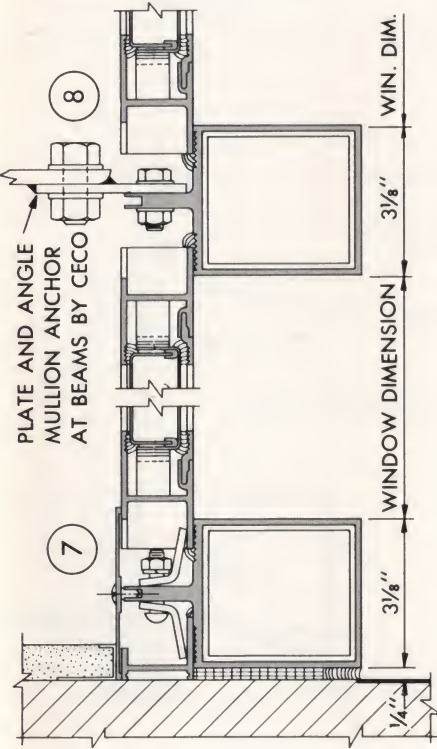
installation details • quarter-size







OPENING



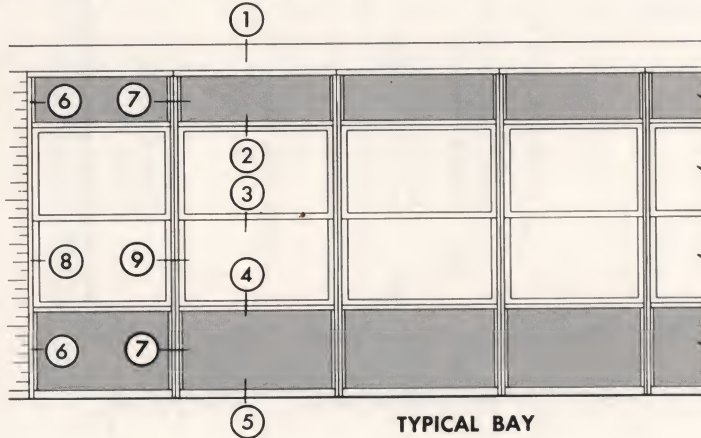


## ONE-STORY CONSTRUCTION

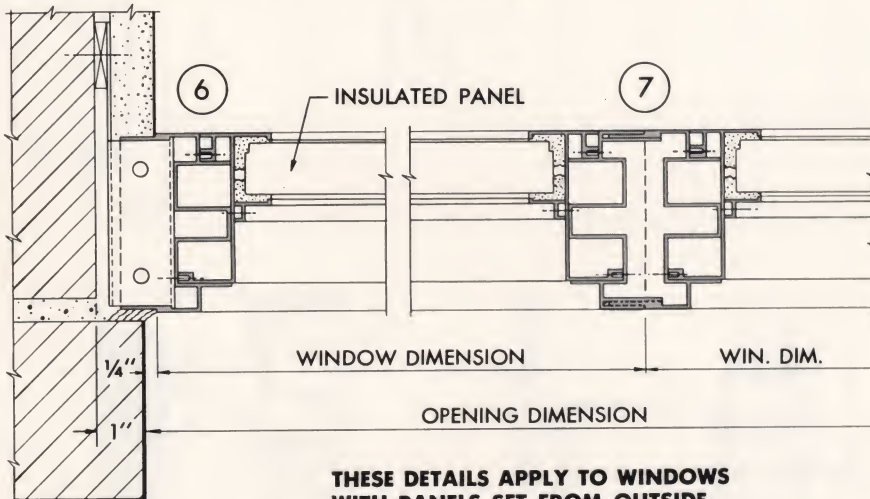
### aluminum / double-hung / series 200-B

**NOTE:** For window portion of Curtainwall Construction shown on this page, see Aluminum Window Catalog #6013-J, pages 4-a thru 9-a.

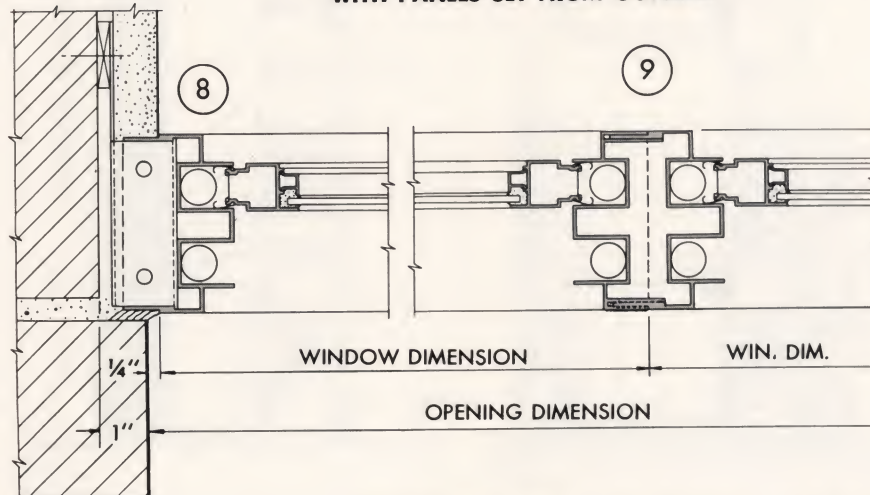
installation details • quarter-size



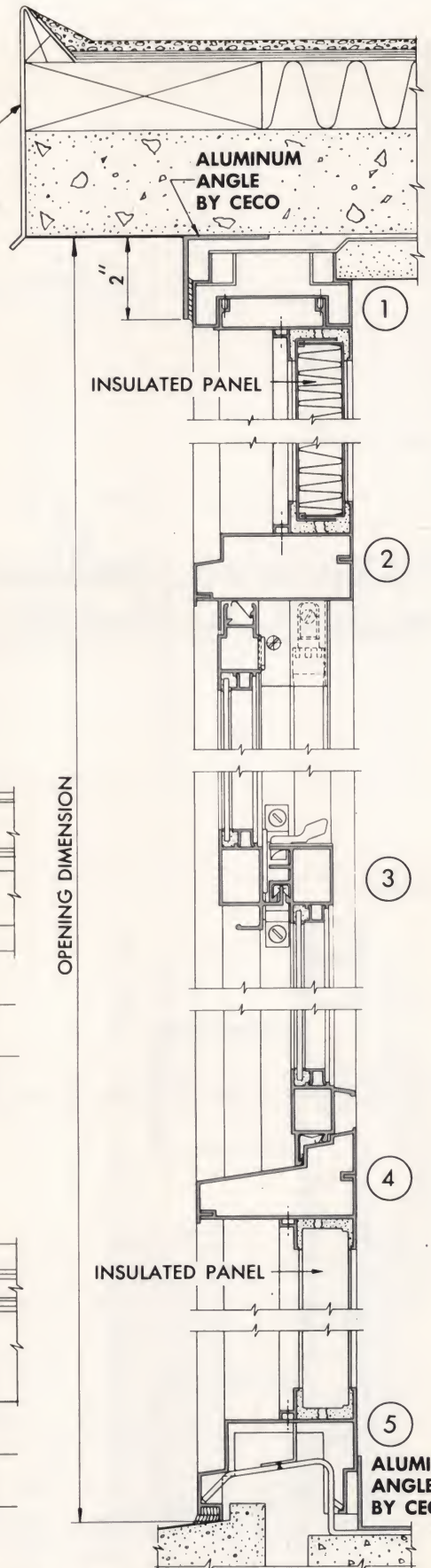
TYPICAL BAY



THESE DETAILS APPLY TO WINDOWS WITH PANELS SET FROM OUTSIDE.



GRAVEL STOP AND FASCIA NOT BY CECO



Joints exposed to weather must be sealed with an approved caulking compound.

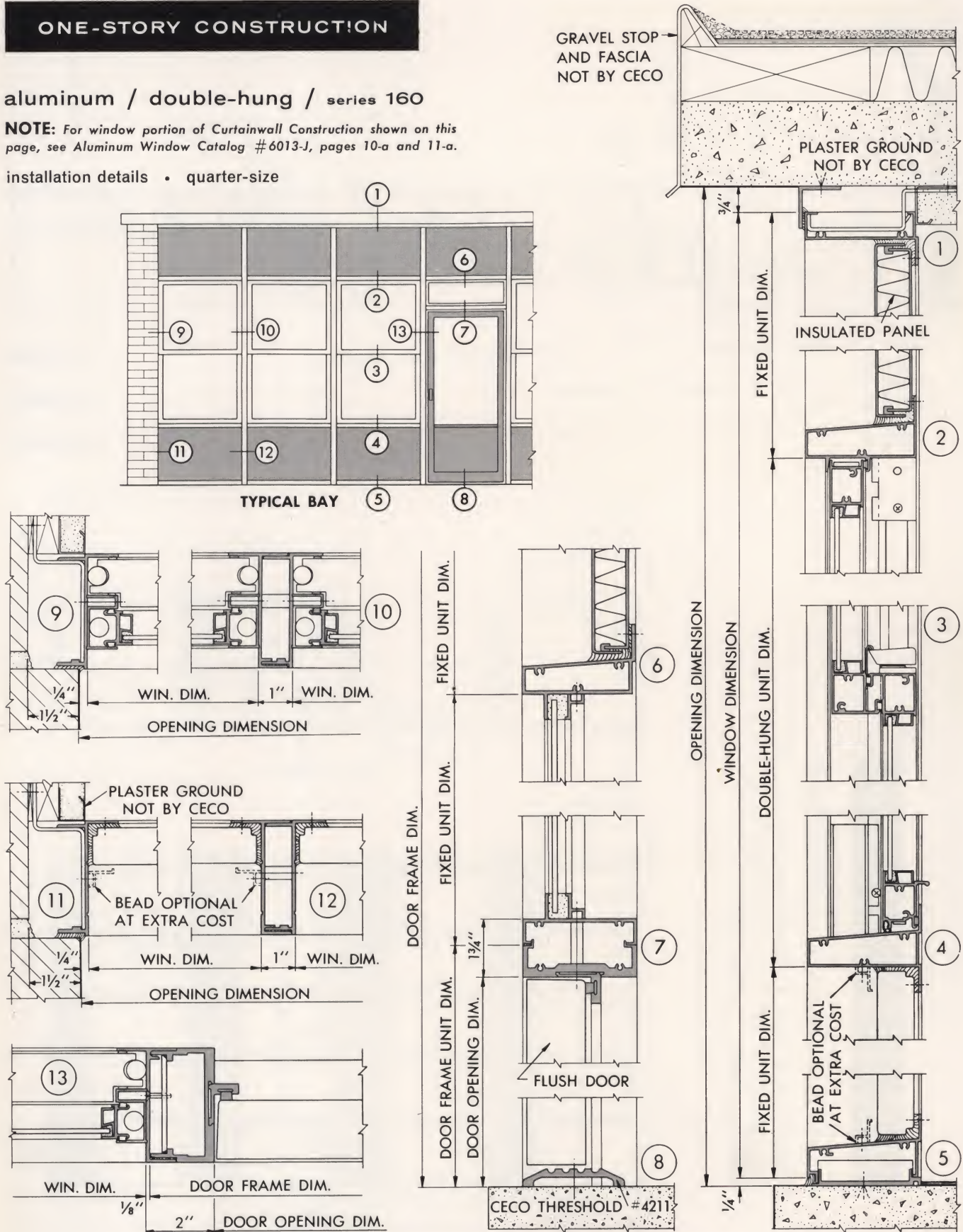


## ONE-STORY CONSTRUCTION

aluminum / double-hung / series 160

**NOTE:** For window portion of Curtainwall Construction shown on this page, see Aluminum Window Catalog #6013-J, pages 10-a and 11-a.

installation details • quarter-size



Joints exposed to weather must be sealed with an approved caulking compound.

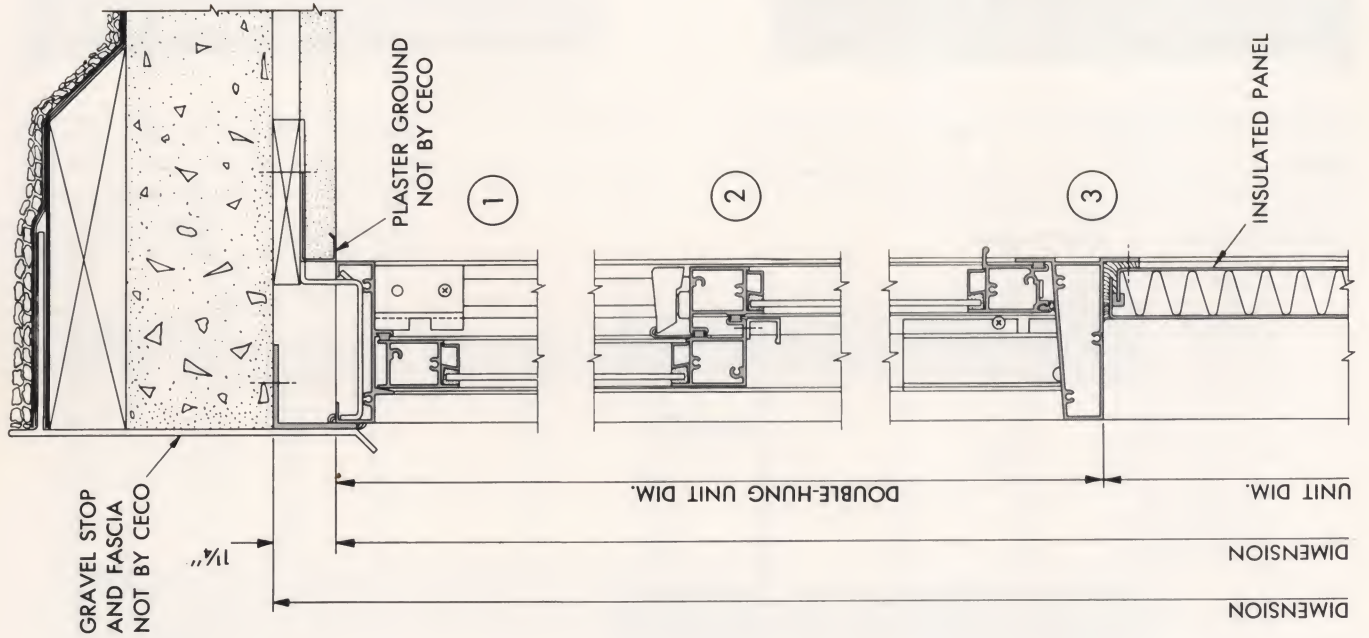
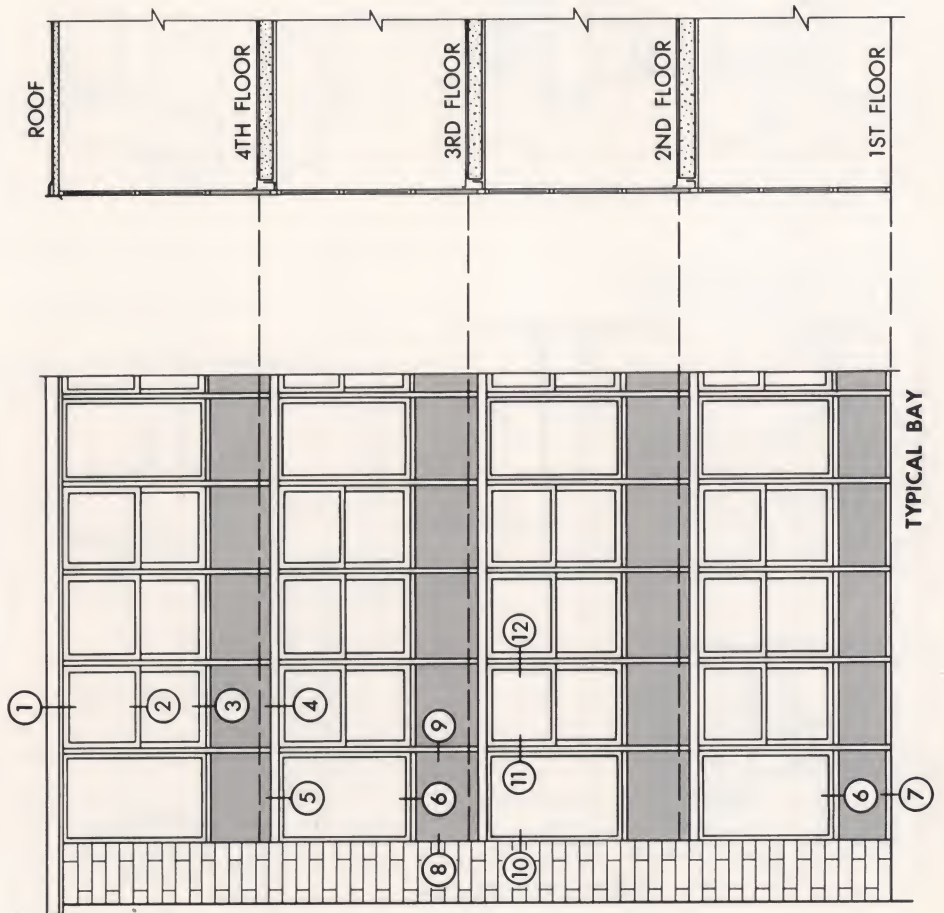


# MULTI-STORY CONSTRUCTION

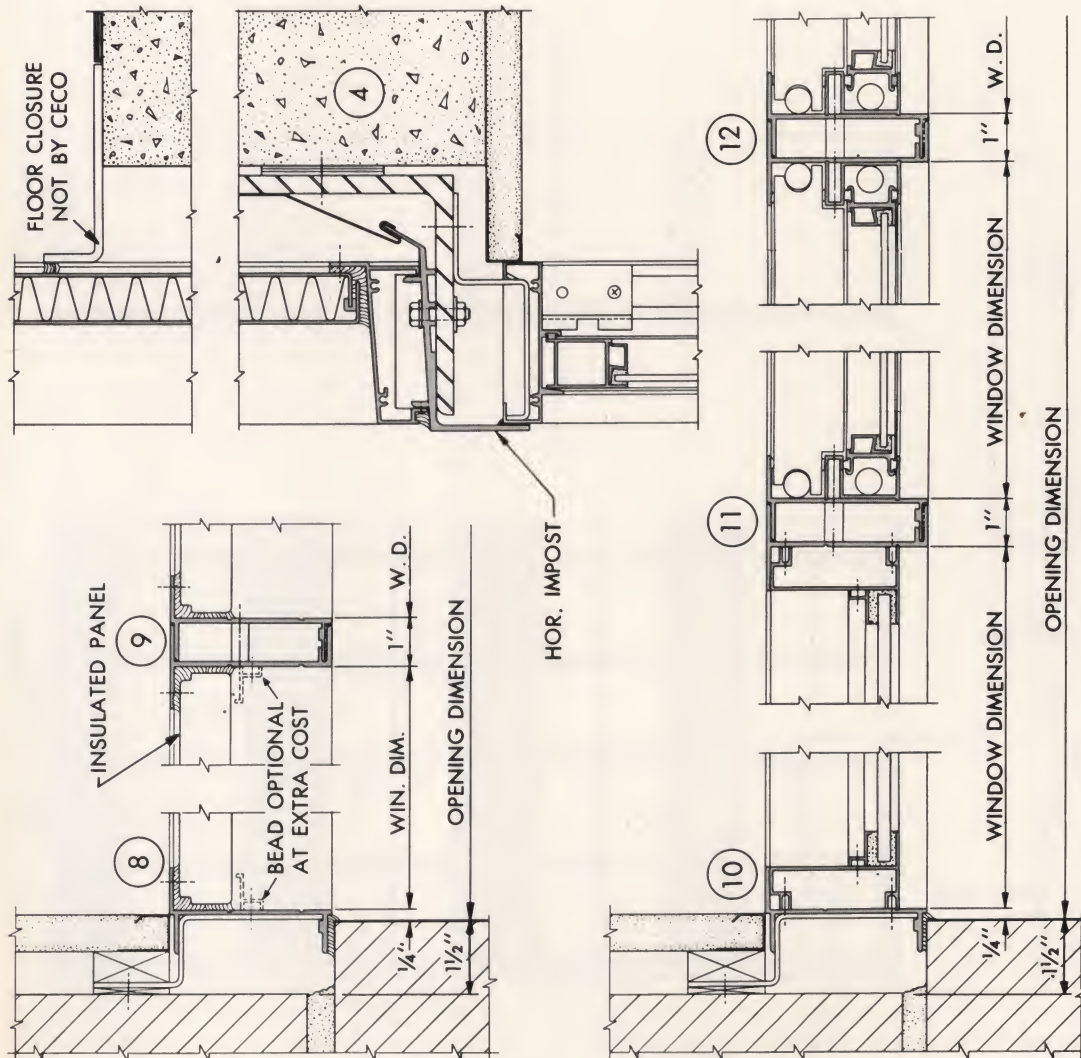
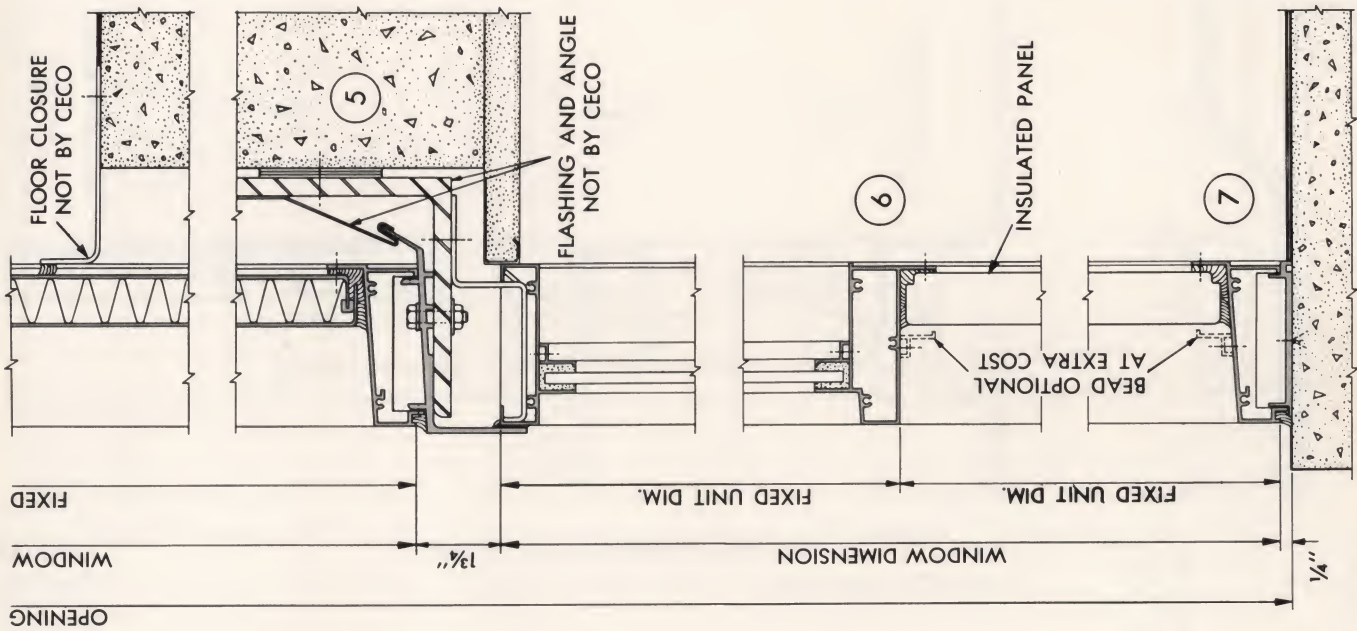
aluminum / double-hung / series 160

**NOTE:** For window portion of Curtainwall Construction shown on this page, see Aluminum Window Catalog #6013-J, pages 10-a and 11-a.

installation details • quarter-size







# WIND LOAD TABLE

ALLOWABLE DEFLECTION = LENGTH/175

15# WIND LOAD  
MAXIMUM SIZE: 4'-0" x 10'-0" MAXIMUM SIZE: 4'-0" x 9'-0"

## WITH SPECIAL REINFORCEMENT

15# WIND LOAD  
MAXIMUM SIZE: 4'-0" x 12'-0" MAXIMUM SIZE: 4'-0" x 11'-0"

ABOVE DATA BASED ON NORMAL IMPOST CONDITIONS.

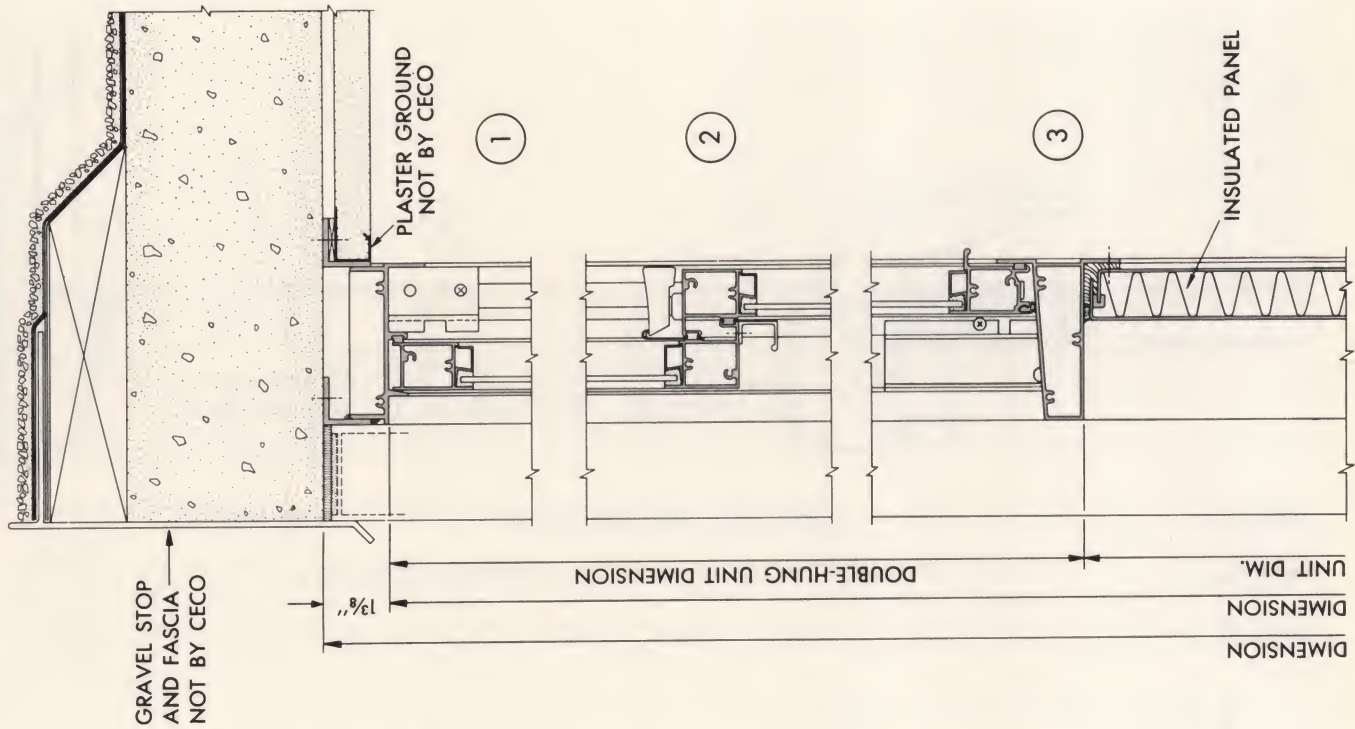
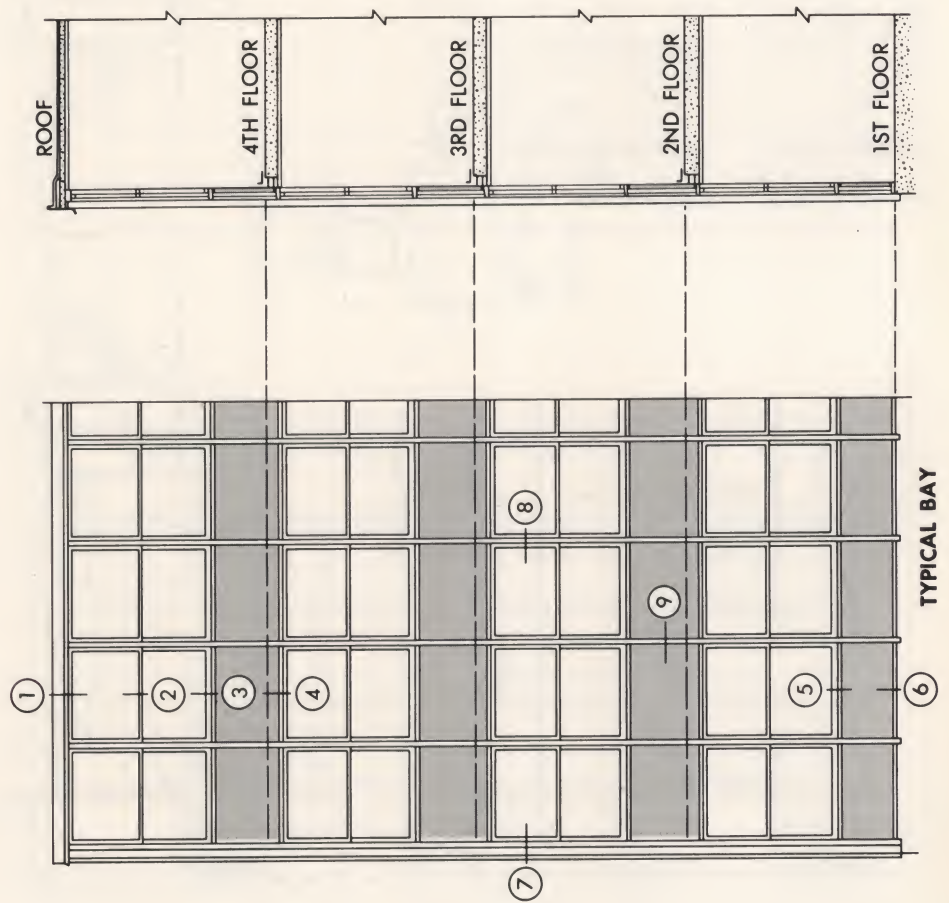
Joints exposed to weather must be sealed with an approved caulking compound.



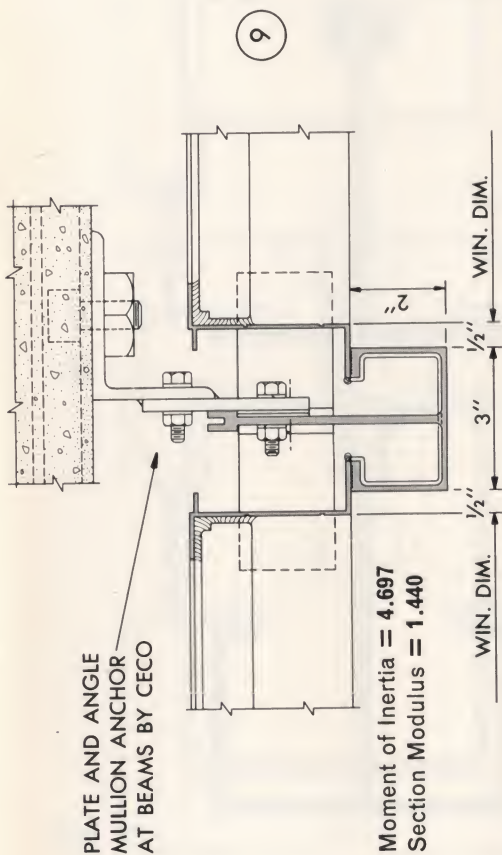
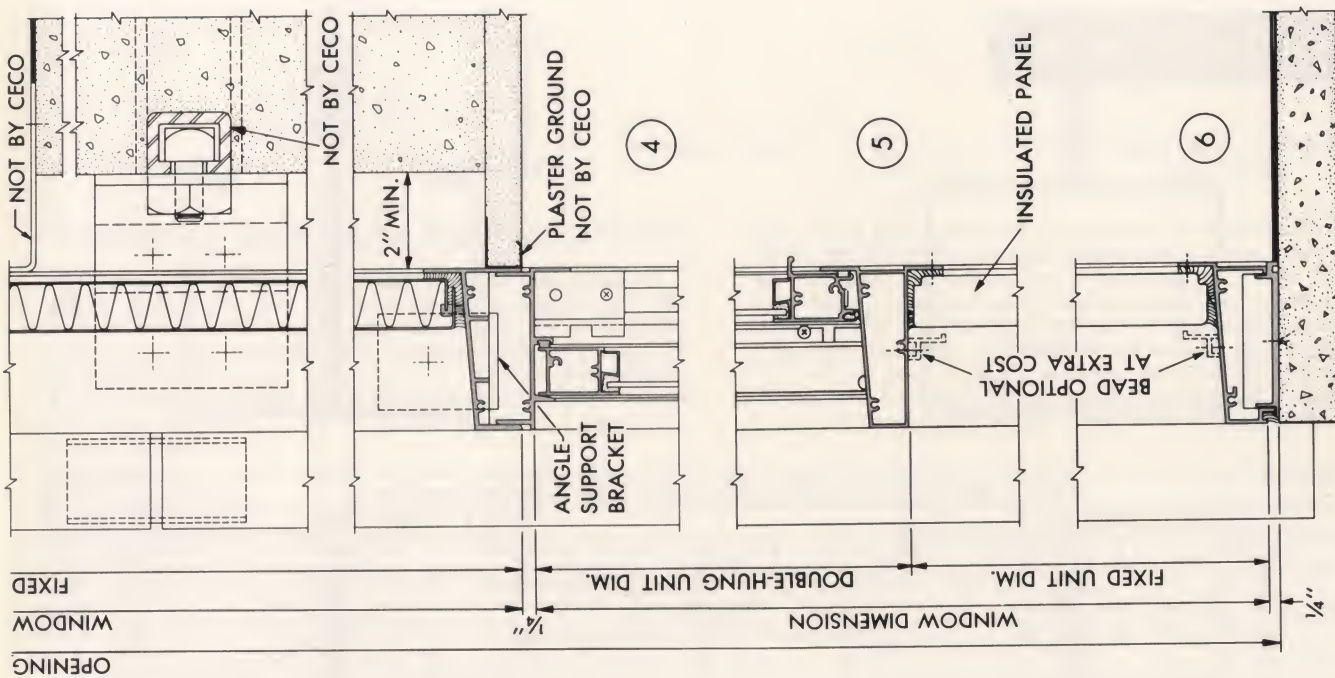
# MULTI-STORY CONSTRUCTION

aluminum / double-hung / series 160

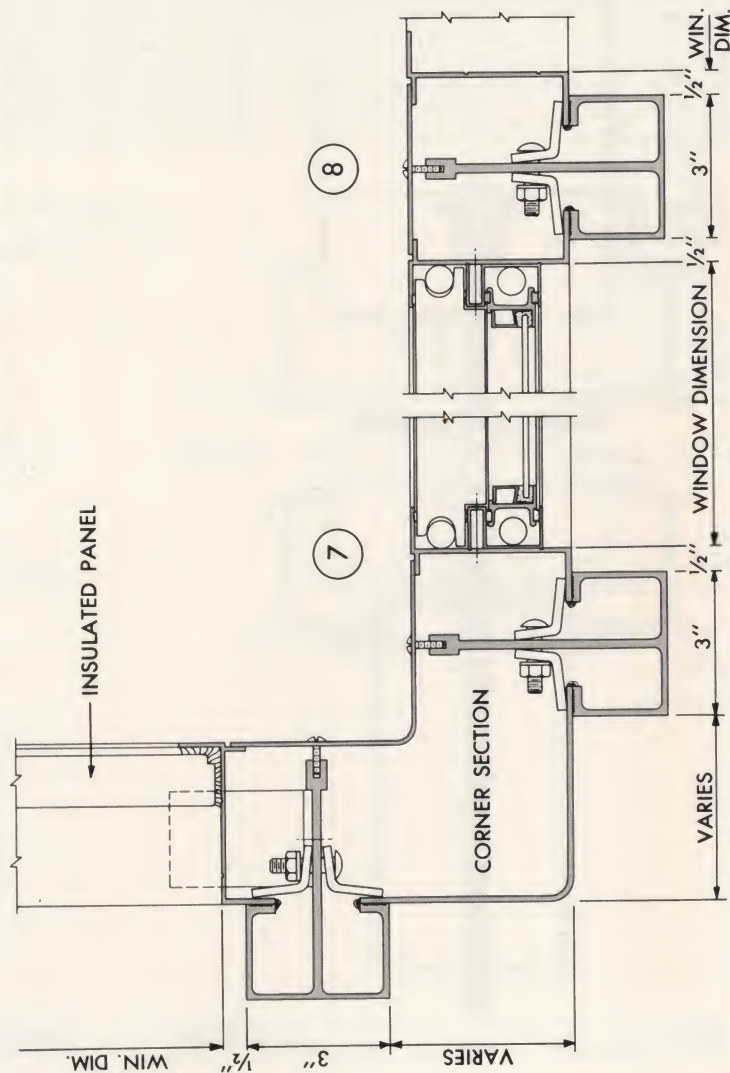
NOTE: For window portion of Curtainwall Construction shown on this page, see Aluminum Window Catalog #6013-J, pages 10-a and 11-a. installation details • quarter-size







SEE PAGE 22 FOR WIND LOAD TABLE.



Joints exposed to weather must be sealed with an approved caulking compound.



## MULLION DETAILS

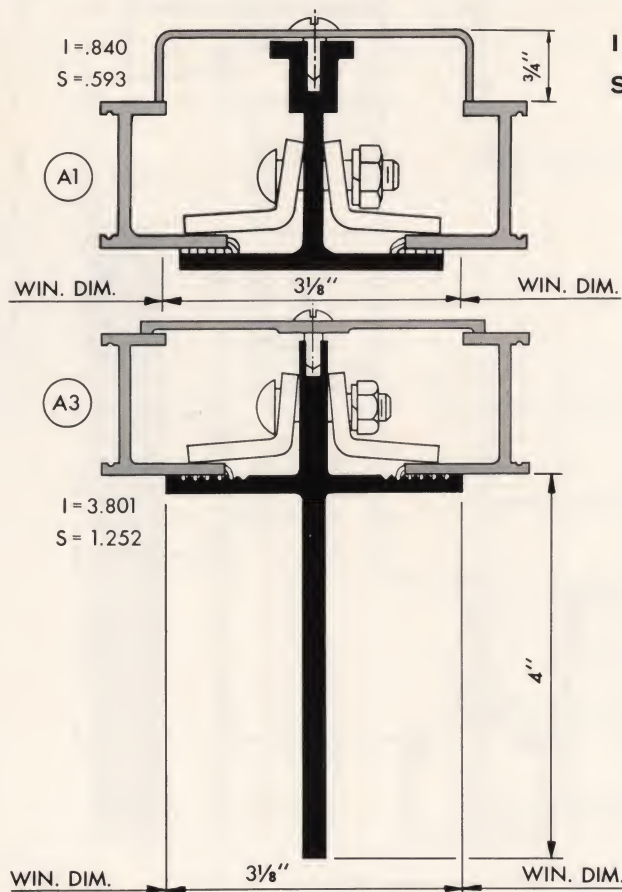
### aluminum / projected / series 1000 / half-size sections

The tables below are based on horizontal loads of 15 and 20 lbs. per sq. ft. (with approximate wind velocities of 60 and 70 M.P.H. respectively) and maximum deflection of 1/175 of span. Mullion heights listed are established conservative dimensions for the center-to-center widths shown. Any departure should be submitted to company engineers for specific job load calculations. Heights given are for single spans unsupported between anchorages. An increase in limit of length can be used when full tubular mullions are

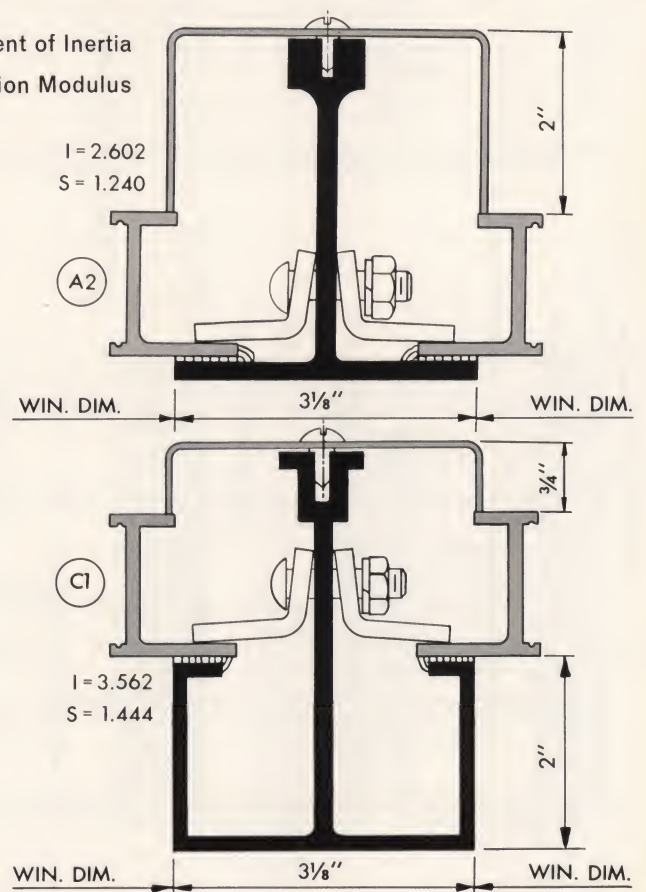
continuous and anchored over two spans in the curtainwall.

In using the tables, obtain the moment of inertia (I) and the section modulus (S) for the width and height required. Then select a mullion detail with I and S factors of equal or higher capacity. For instance, mullion D2 accommodates the 12'-0" height and the 3'-9" width at 20 P.S.F. wind load because the D2 I and S are greater than 4.112 and 1.522, respectively.

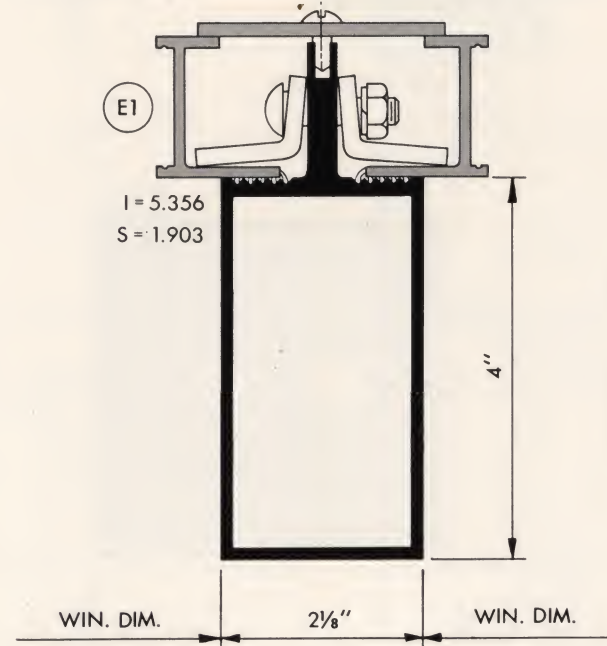
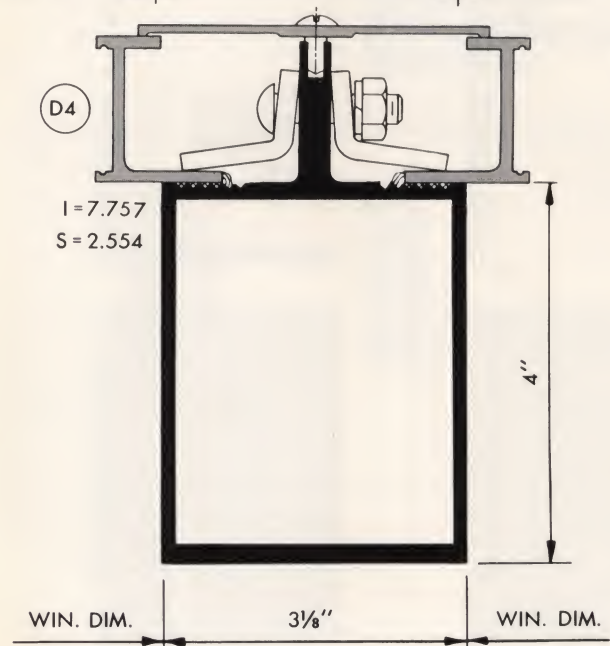
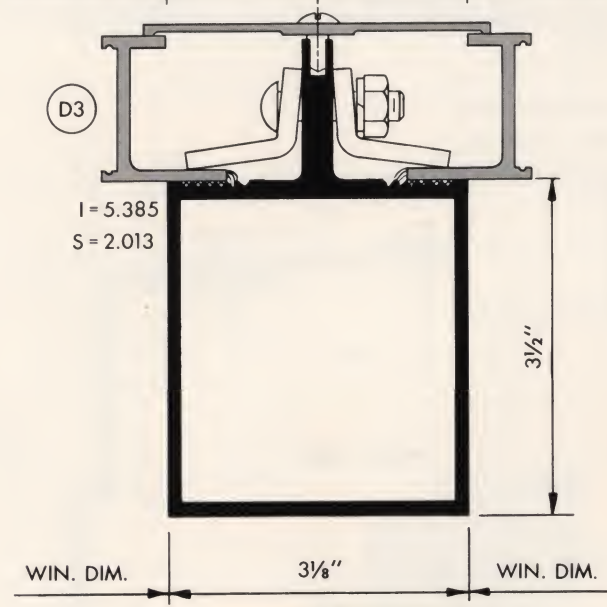
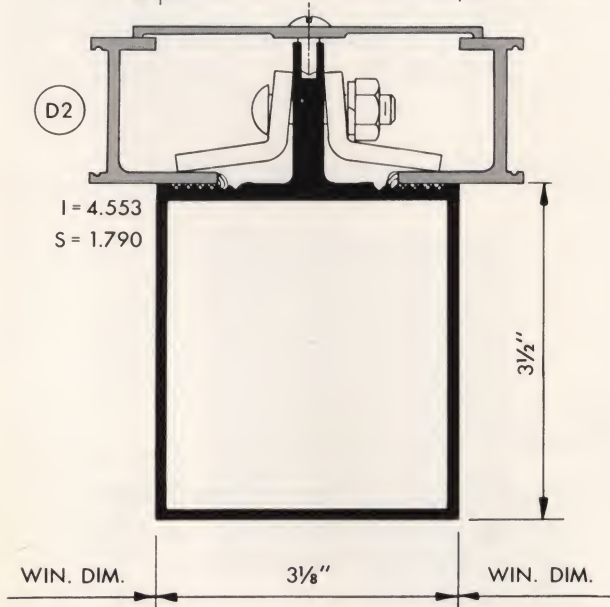
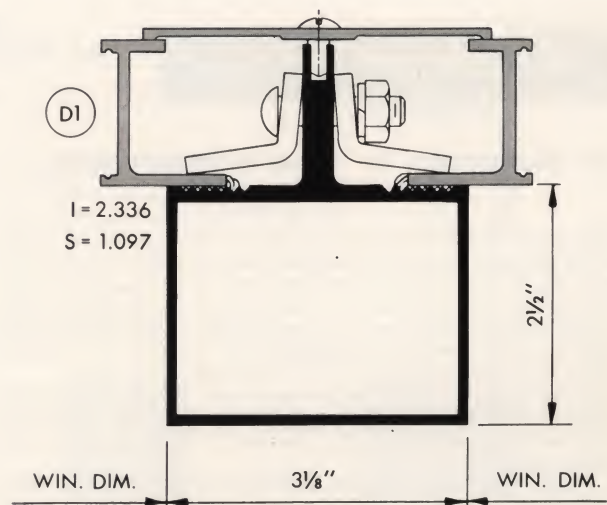
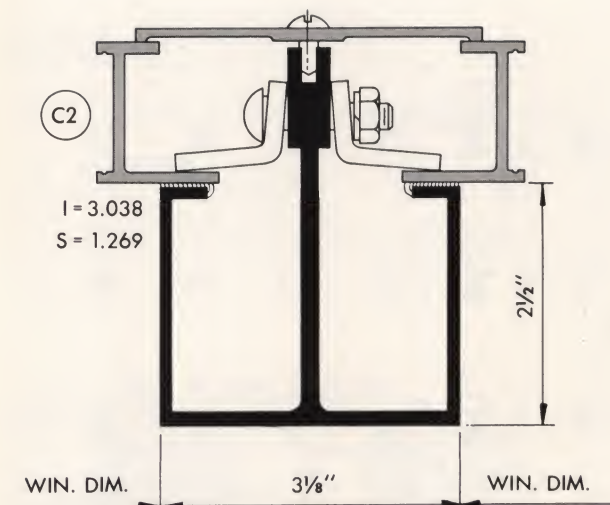
SAFE LIMITS—ALUMINUM MULLIONS—Rectangular Loading																									
15 P.S.F. WIND LOAD										20 P.S.F. WIND LOAD															
W.	HT.	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	12'-6"	13'-0"	13'-6"	14'-0"	14'-6"	15'-0"
3'-6"	I	.856	1.027	1.220	1.434	1.674	1.937	2.227	2.544	2.891	1.141	1.369	1.625	1.911	2.229	2.580	2.967	3.390	3.852	4.353	4.897	5.484	6.116	6.795	7.523
	S	.473	.533	.598	.666	.738	.814	.893	.977	1.063	.631	.713	.799	.891	.987	1.087	1.194	1.304	1.422	1.542	1.667	1.798	1.934	2.074	2.220
3'-9"	I	.916	1.099	1.304	1.534	1.790	2.072	2.382	2.722	3.093	1.218	1.461	1.735	2.040	2.380	2.755	3.167	3.619	4.112	4.648	5.228	5.855	6.530	7.255	8.032
	S	.506	.571	.640	.713	.791	.872	.957	1.046	1.139	.676	.763	.856	.953	1.057	1.165	1.278	1.397	1.522	1.651	1.786	1.926	2.071	2.222	2.378
4'-0"	I	.979	1.174	1.394	1.639	1.912	2.213	2.545	2.908	3.304	1.304	1.565	1.857	2.184	2.548	2.950	3.391	3.875	4.403	4.976	5.598	6.269	6.992	7.768	8.599
	S	.540	.610	.684	.762	.844	.930	1.021	1.116	1.215	.722	.815	.913	1.018	1.127	1.243	1.365	1.491	1.624	1.762	1.906	2.055	2.210	2.371	2.537
4'-6"	I	1.101	1.321	1.568	1.844	2.151	2.490	2.863	3.271	3.717	1.467	1.760	2.089	2.457	2.866	3.318	3.815	4.359	4.952	5.598	6.297	7.051	7.864	8.737	9.673
	S	.608	.686	.769	.857	.949	1.047	1.149	1.256	1.367	.812	.916	1.027	1.145	1.269	1.398	1.535	1.678	1.827	1.982	2.144	2.312	2.487	2.667	2.854
5'-0"	I	1.224	1.468	1.742	2.049	2.390	2.767	3.181	3.635	4.130	1.631	1.956	2.322	2.731	3.185	3.687	4.239	4.844	5.504	6.221	6.997	7.836	8.740	9.709	10.749
	S	.675	.762	.854	.952	1.055	1.163	1.276	1.395	1.519	.902	1.018	1.142	1.272	1.410	1.553	1.706	1.864	2.030	2.203	2.382	2.569	2.767	2.963	3.172



I = Moment of Inertia  
S = Section Modulus









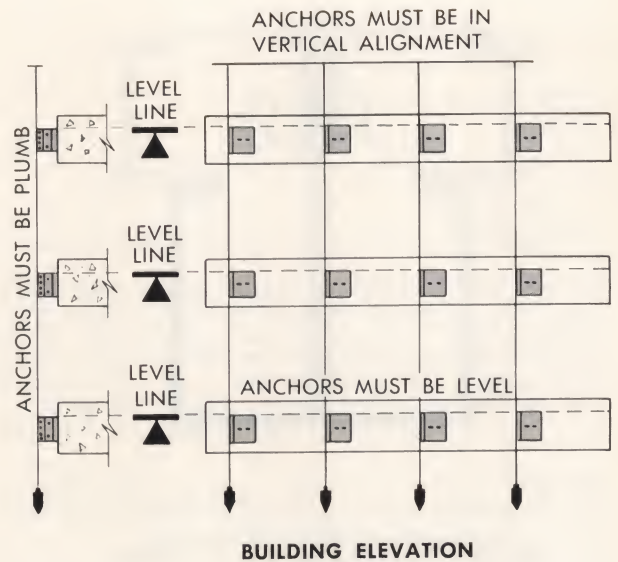
## ANCHORAGE DETAILS

### for aluminum or steel curtainwalls

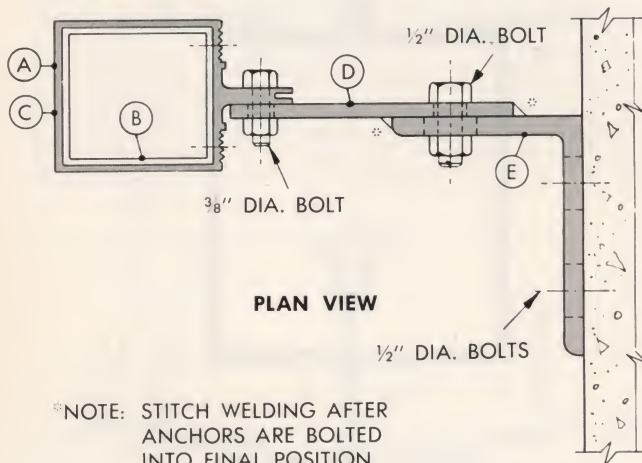
Wind loads and dead loads of windows, glass, insulated panels and mullions of multi-story curtainwall are generally transferred from the vertical mullions through anchors to the main structural system of the building at each floor. This provides rigidity for the curtainwall system—yet the design of the anchors must allow for adjustment to compensate for reasonable allowable tolerances in the building's structural system.

To assure a flat and plumb curtainwall system, the mullion anchors should be designed and furnished by the curtainwall manufacturer, and be carefully installed in accordance with their recommendations.

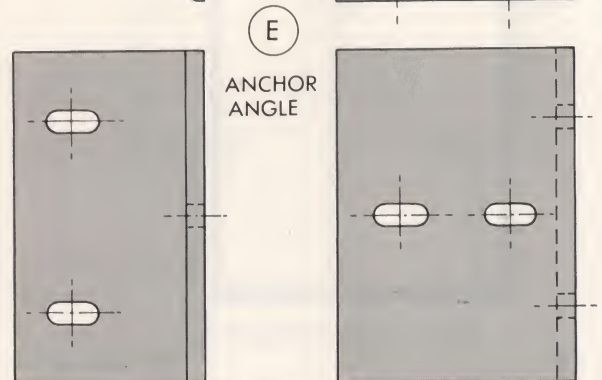
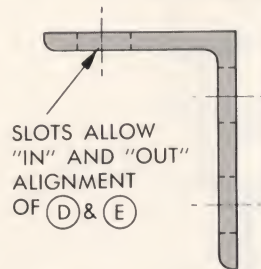
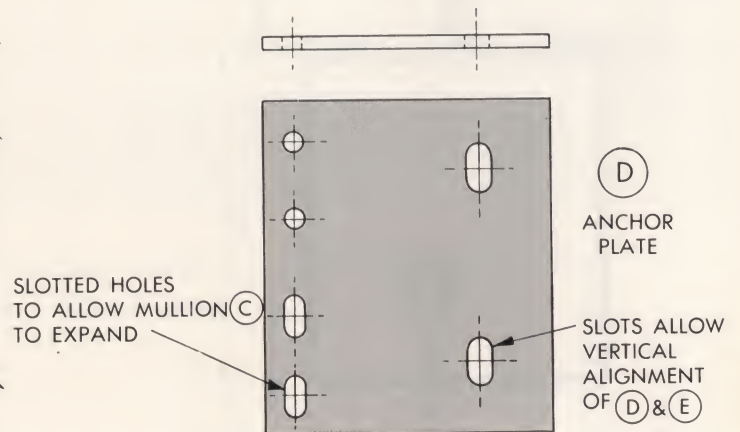
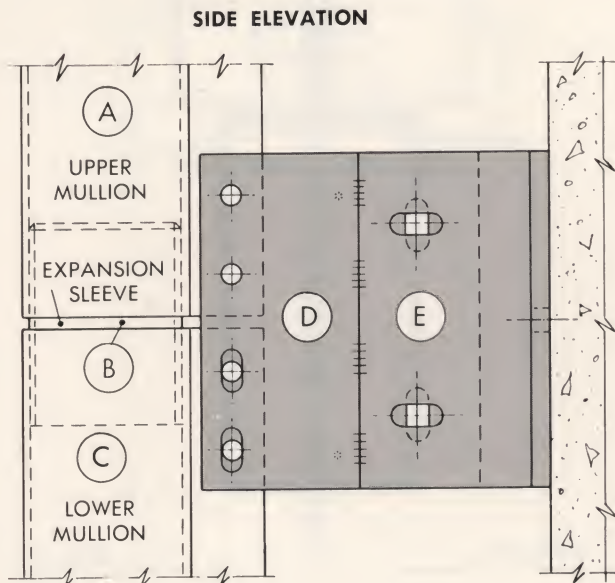
The plate-and-angle anchor featured on these pages illustrates design principles of typical curtainwall mullion anchors. Anchors are modified to suit the need of each building and curtainwall design.



anchorage details  
scale • half-size



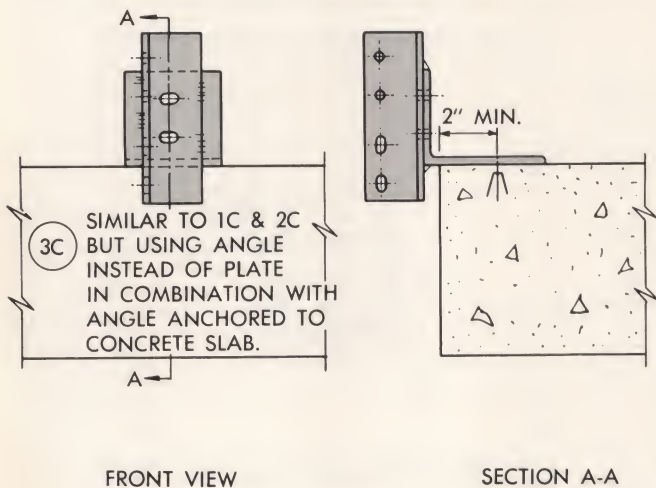
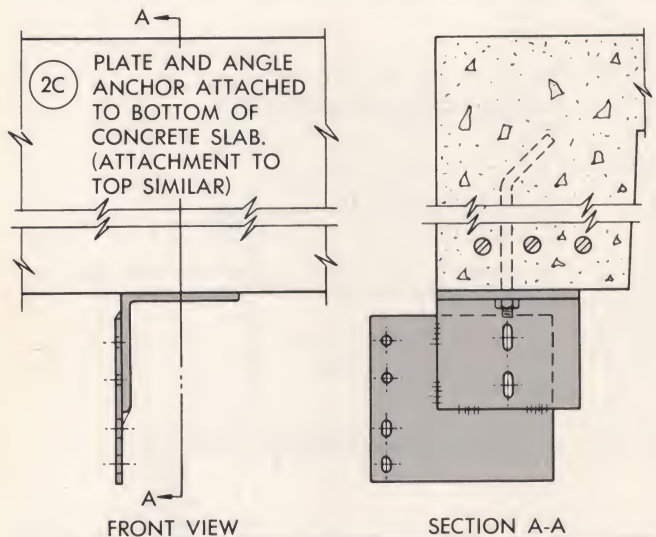
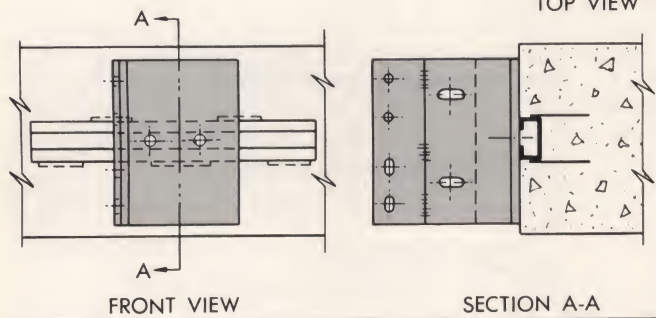
NOTE: STITCH WELDING AFTER ANCHORS ARE BOLTED INTO FINAL POSITION.



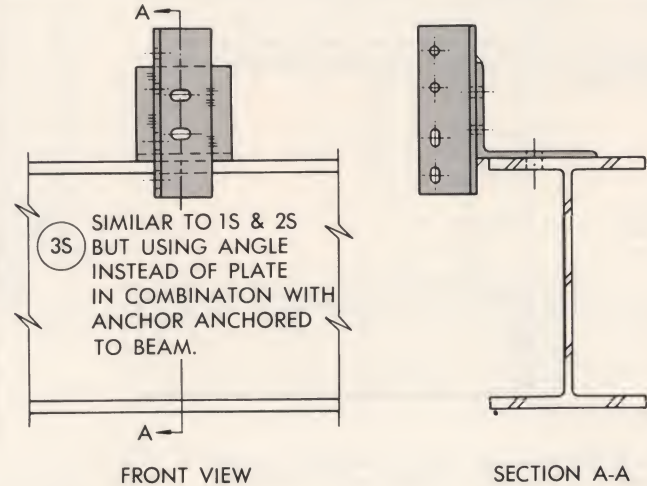
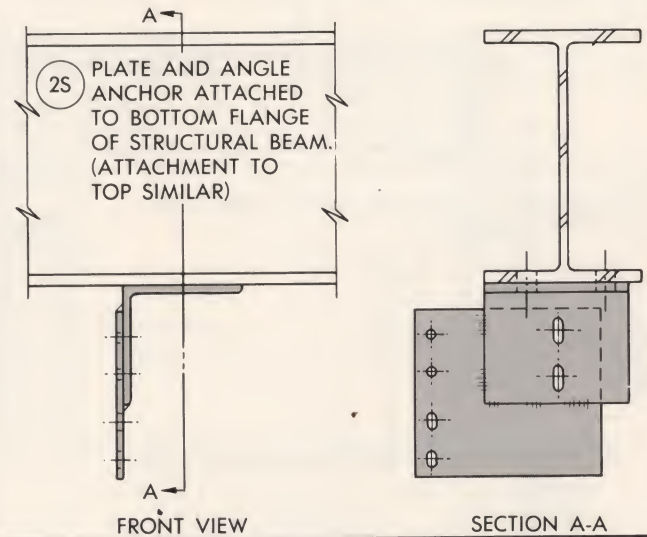
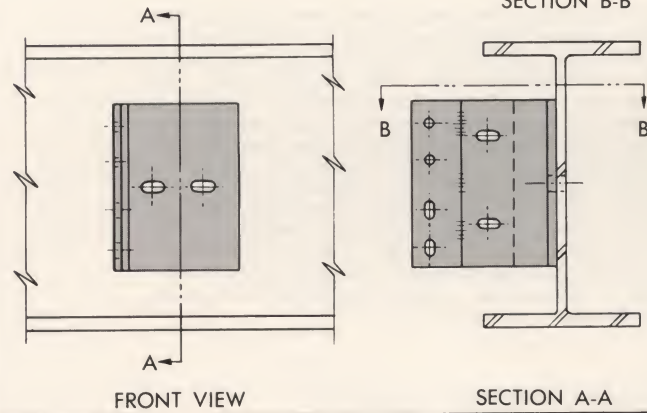


**CONCRETE CONSTRUCTION**scale •  $1\frac{1}{2}" = 1'-0"$ 

- 1C THREE VIEWS OF PLATE AND ANGLE ANCHOR ATTACHED TO FACE OF FLOOR SLAB (OR CONCRETE BEAM).

**STEEL CONSTRUCTION**scale •  $1\frac{1}{2}" = 1'-0"$ 

- 1S THREE VIEWS OF PLATE AND ANGLE ANCHOR ATTACHED TO WEB OF STRUCTURAL BEAM.



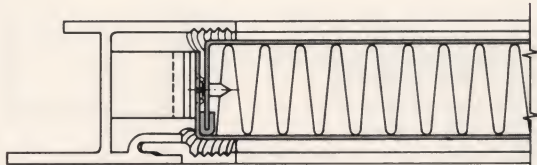
## PANELS

### aluminum

#### half-size sections

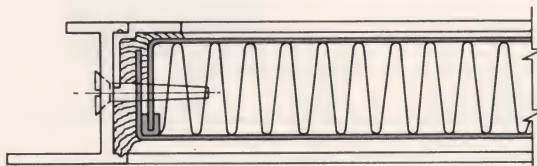
The insulating panels shown here are typical of the many kinds of installations found in modern curtain-wall construction. They range from the box-type to the cement-asbestos-type and ceramic-type, with allowable variations to suit individual curtainwall designs. Panels may be installed in Aluminum Projected and Casements, Grid-type, and Double-hung curtainwalls. Consideration should be given to whether the panels are to be installed from the exterior or interior, and necessary provisions made in the construction to allow convenient installation. In multi-story buildings, the interior installation should be considered since workmen can use the floor structure as convenient working platforms. For panel specifications, see page 41.

(A)



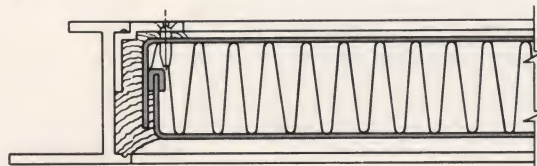
1-1/16" BOX TYPE PANEL USED WITH ALUMINUM PROJECTED WINDOW—APPLIED FROM EXTERIOR

(B)



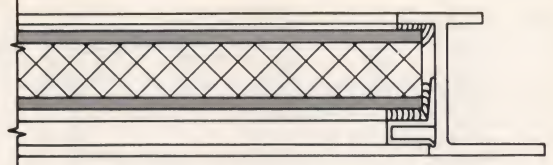
1-1/16" BOX TYPE PANEL USED WITH ALUMINUM PROJECTED WINDOW—APPLIED FROM EXTERIOR PRIOR TO ERECTION WITH WEB SCREW.

(C)



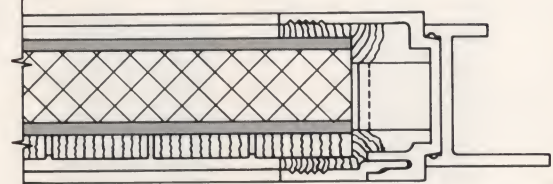
1-1/16" BOX TYPE PANEL USED WITH ALUMINUM PROJECTED WINDOW—APPLIED FROM EXTERIOR WITH FLANGE SCREW.

(D)



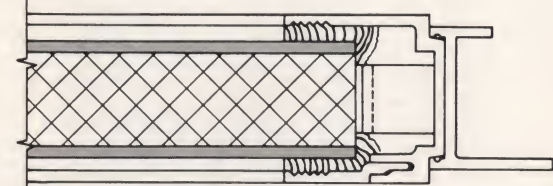
1 1/16" INSULATED CEMENT-ASBESTOS PANEL USED WITH ALUMINUM PROJECTED WINDOW—APPLIED FROM EXTERIOR

(E)



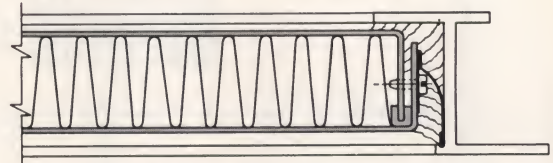
1 1/4" CERAMIC TILE PANEL USED WITH ALUMINUM PROJECTED WINDOW—APPLIED FROM EXTERIOR

(F)



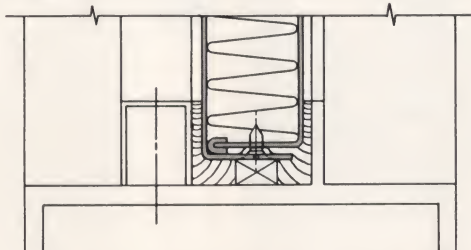
1 1/8" INSULATED CEMENT-ASBESTOS PANEL USED WITH ALUMINUM PROJECTED WINDOW—APPLIED FROM EXTERIOR

(G)



1-1/16" BOX TYPE PANEL USED WITH ALUMINUM PROJECTED WINDOW—APPLIED FROM EXTERIOR

(H)



1-1/16" BOX TYPE PANEL USED WITH ALUMINUM GRID-TYPE CURTAINWALL—APPLIED FROM EXTERIOR



## HEAD AND SILL CONDITIONS

### aluminum

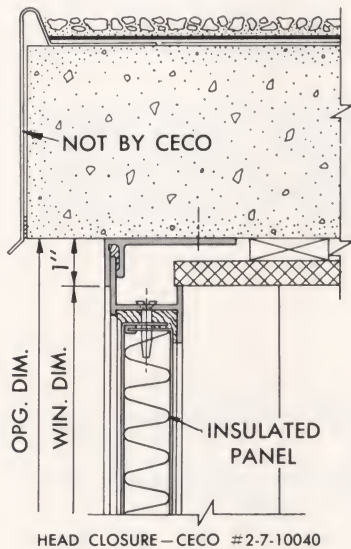
installation details • quarter-size

The head and sill closures shown on these pages are typical of the conditions often encountered in actual construction. As head and sill closures are such an important part of a successful curtainwall, they should receive the same care in design and installation as the vertical mullion anchors. Each building design should be reviewed and analyzed as to conditions encountered and a decision made as to whether the head and sill closures are to be set before or after the mullions and windows. Head and sill conditions are modified to fit each situation. Head

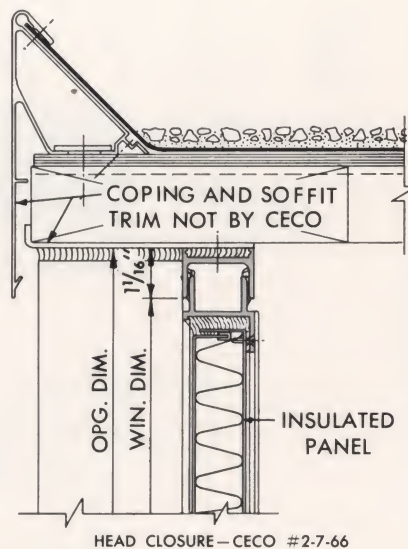
closures are designed to be flexible, with consideration given to two important points—adjustment so the closures can be positioned correctly and provision for vertical expansion of the curtainwall system.

Head and sill closures should be installed in accordance with the curtainwall manufacturer's instructions, because the final position of the closures must be straight, level and in alignment with anchors and sub-sills below. Consult the Ceco district office for further information.

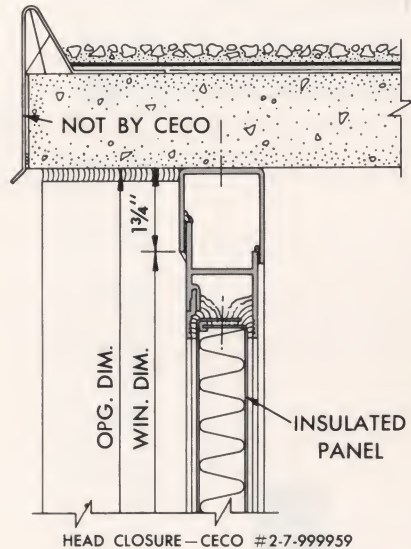
(A)



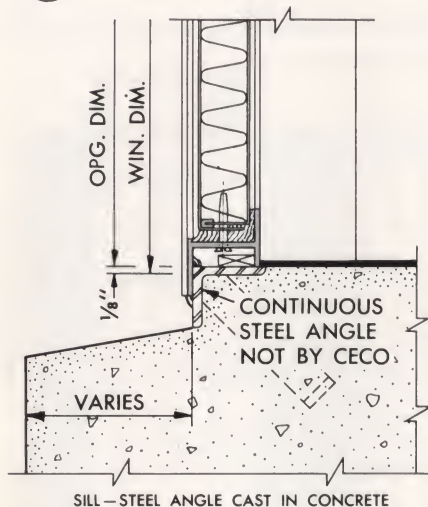
(B)



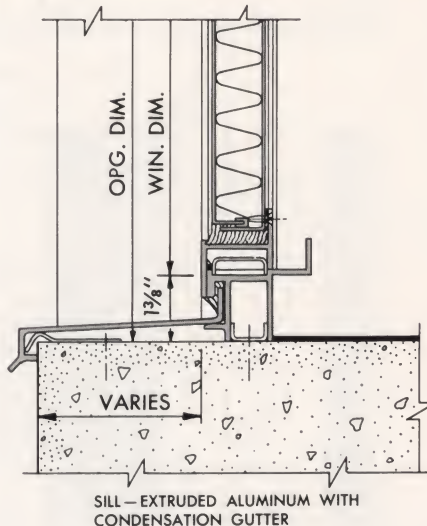
(C)



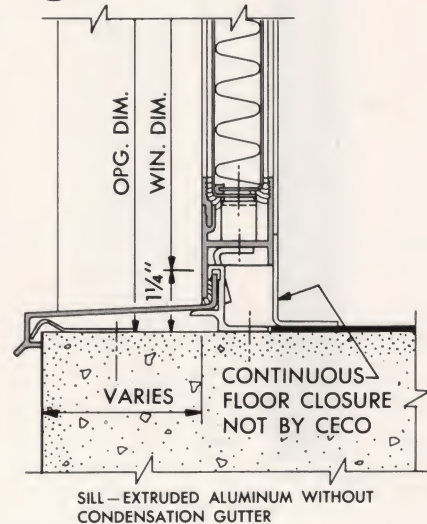
(D)



(E)



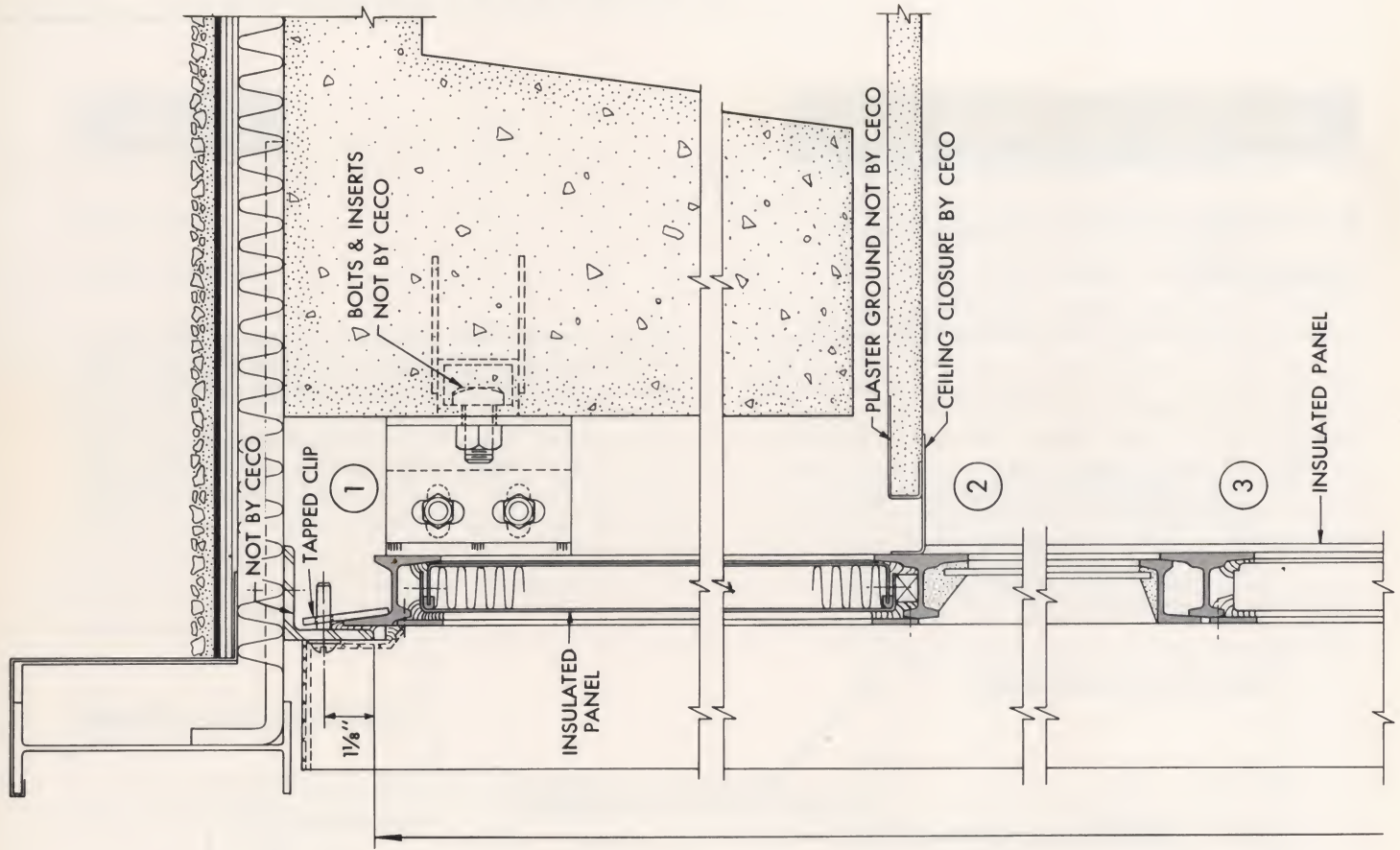
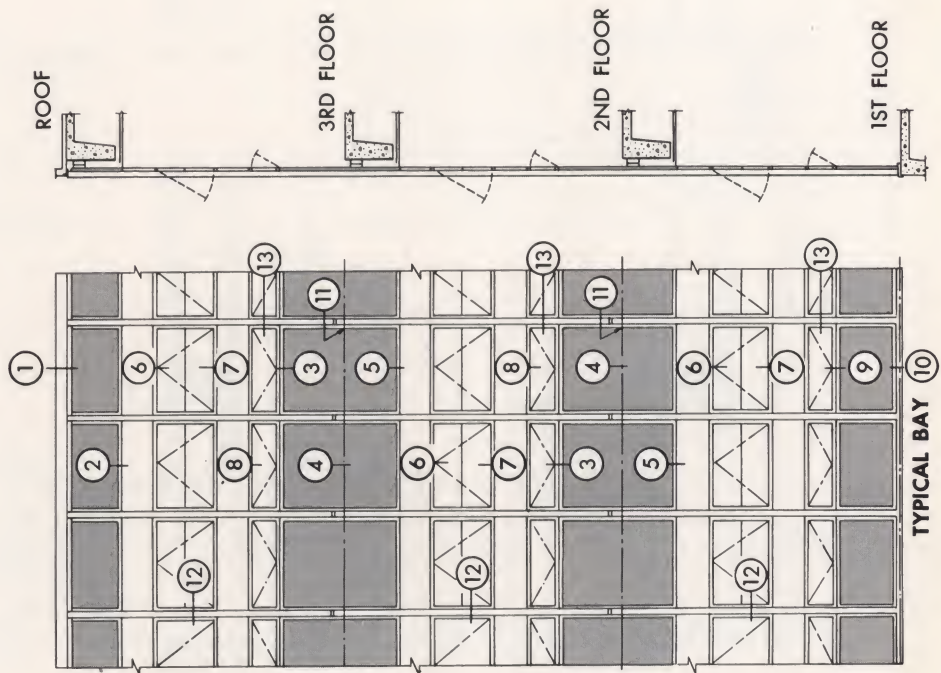
(F)



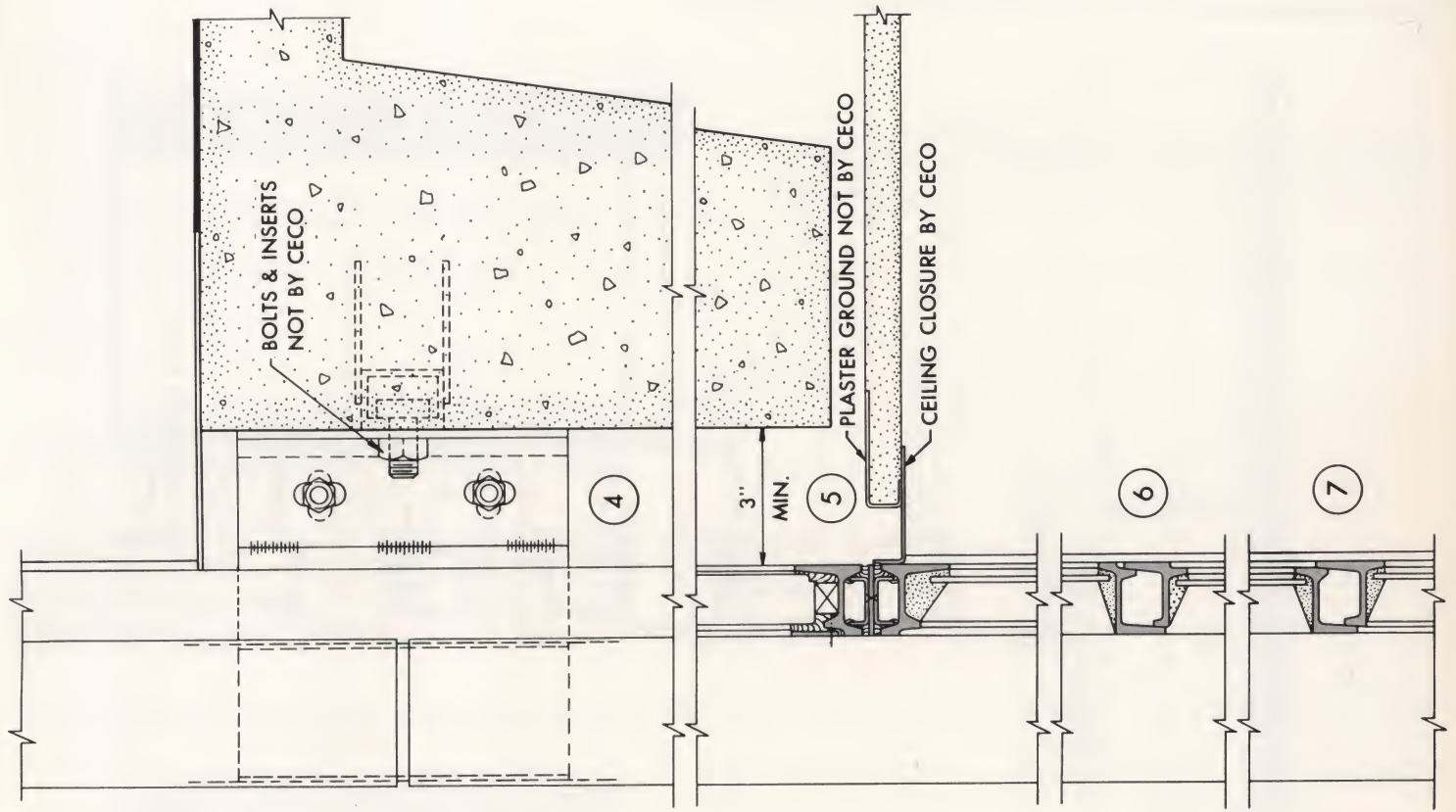
# MULTI-STORY CONSTRUCTION

## steel / 1½" heavy-intermediate

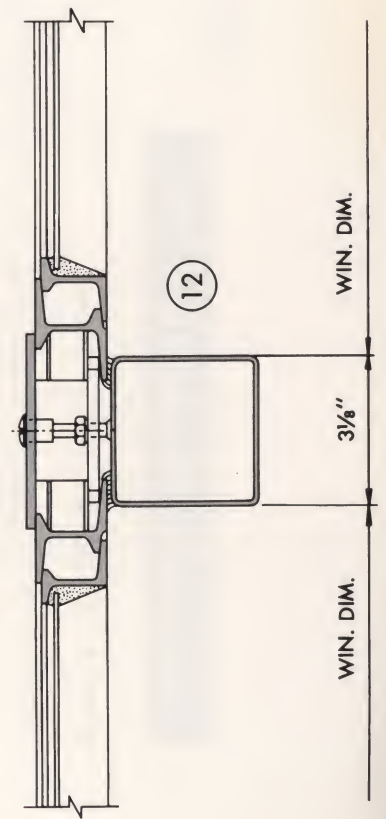
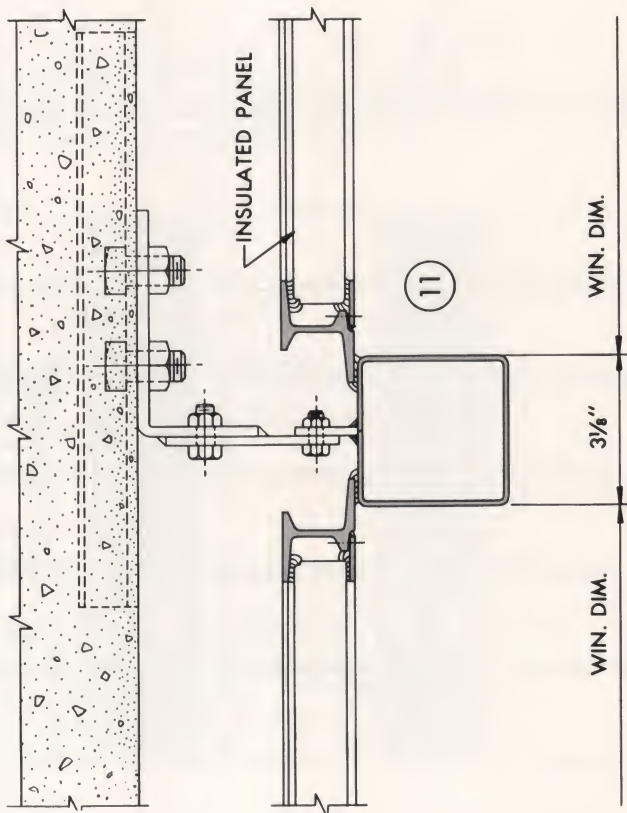
installation details • quarter-size

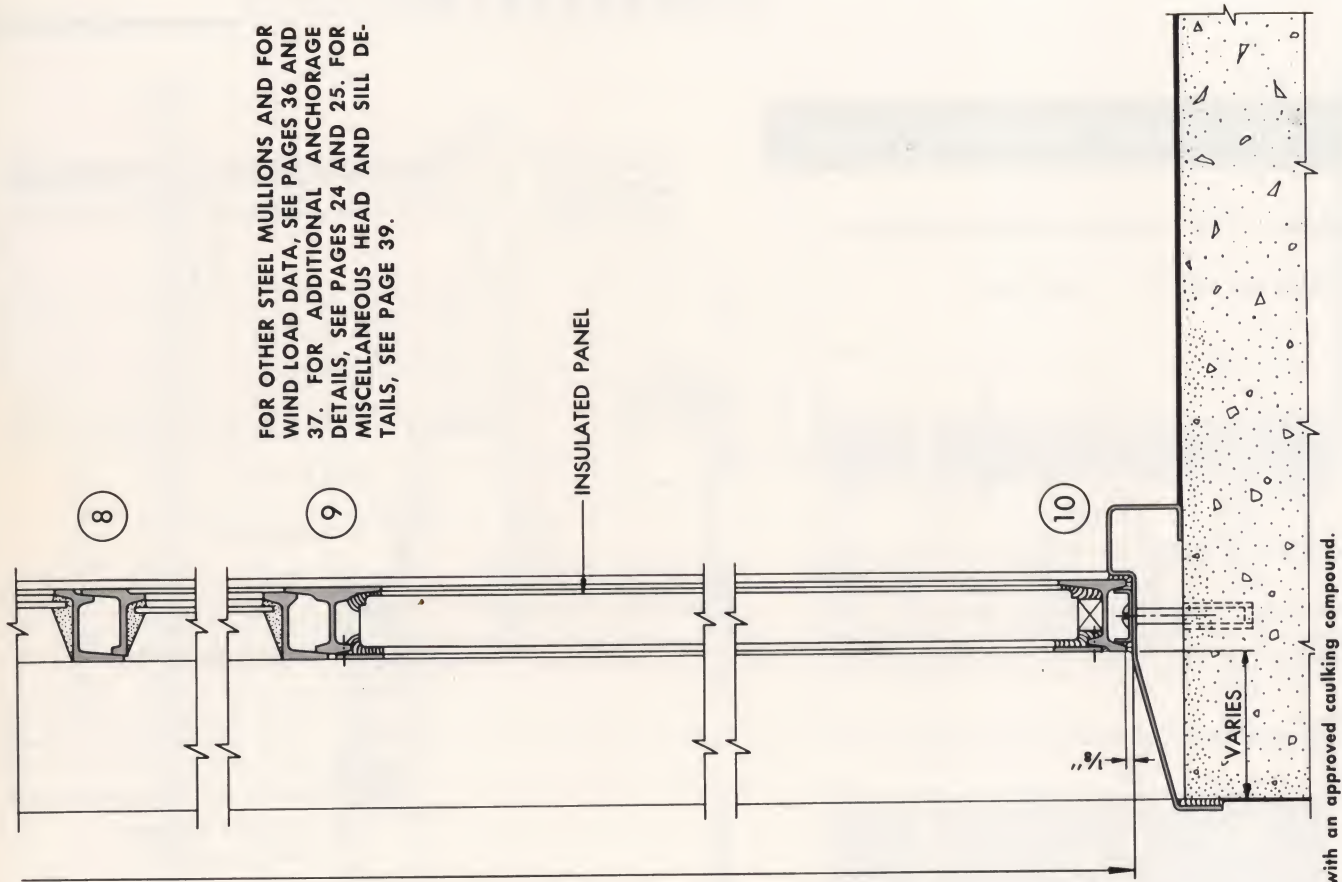




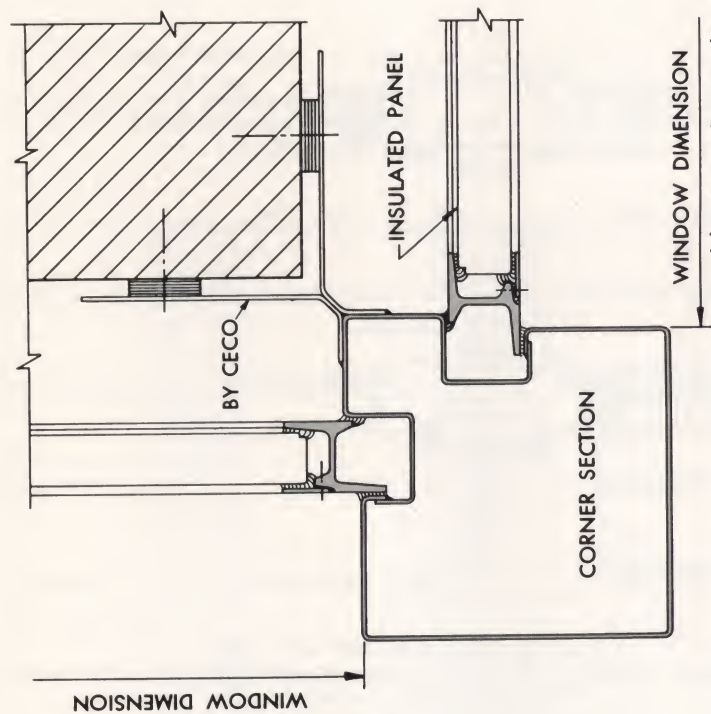
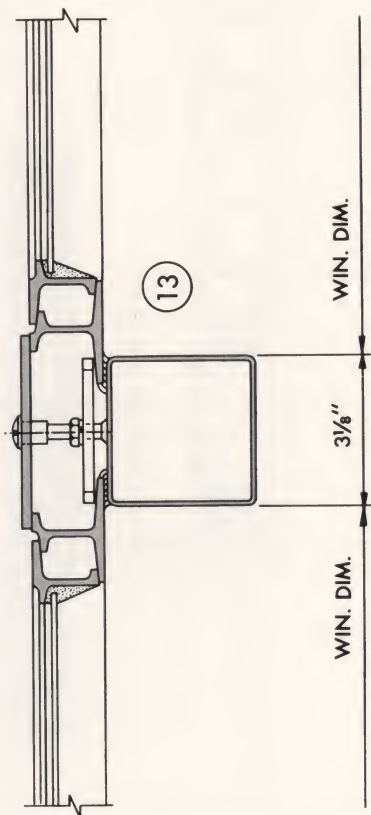


OPENING DIMENSION





FOR OTHER STEEL MULLIONS AND FOR  
WIND LOAD DATA, SEE PAGES 36 AND  
37. FOR ADDITIONAL ANCHORAGE  
DETAILS, SEE PAGES 24 AND 25. FOR  
MISCELLANEOUS HEAD AND SILL DE-  
TAILS, SEE PAGE 39.



Joints exposed to weather must be sealed with an approved caulking compound.

TYPICAL BAY

(13)

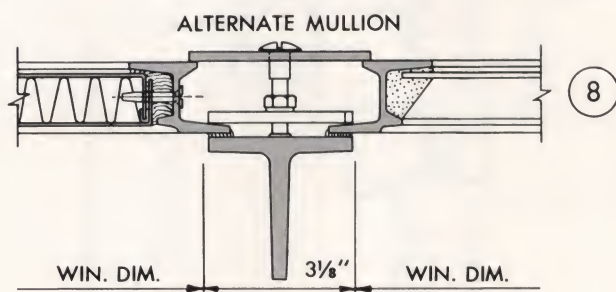
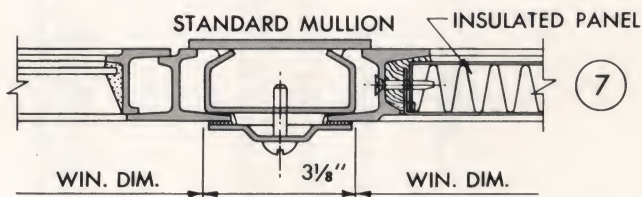
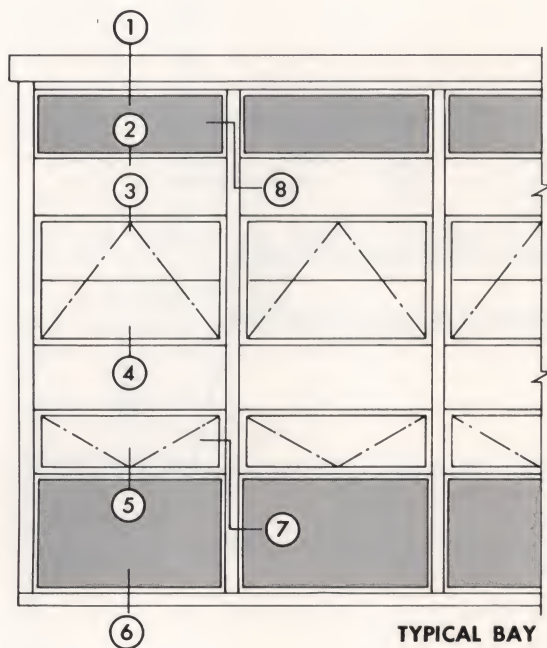
(8)



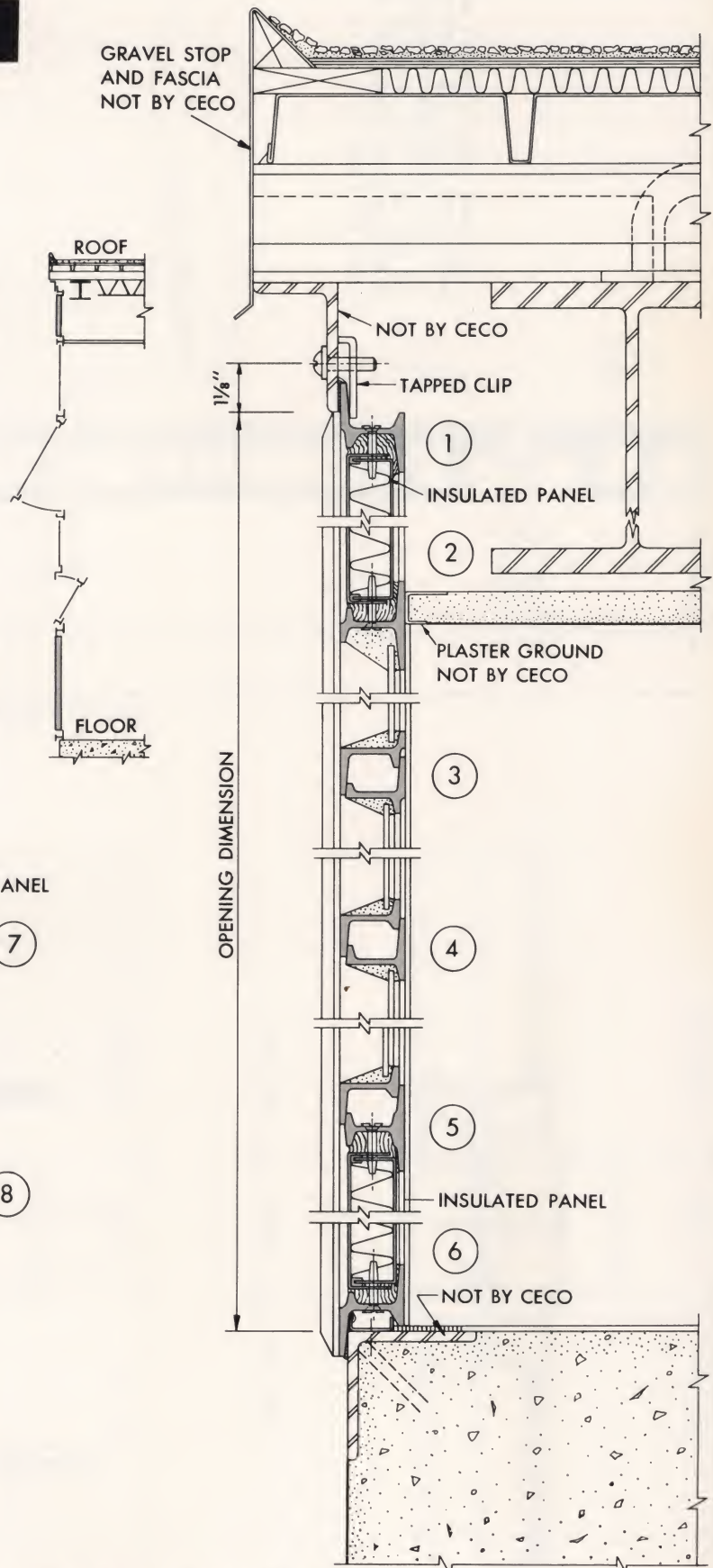
## ONE-STORY CONSTRUCTION

steel / 1½" heavy-intermediate

installation details • quarter-size



FOR OTHER STEEL MULLIONS AND FOR WIND LOAD DATA, SEE PAGES 36 AND 37. FOR ADDITIONAL ANCHORAGE DETAILS, SEE PAGES 24 AND 25. FOR MISCELLANEOUS HEAD AND SILL DETAILS, SEE PAGE 39.

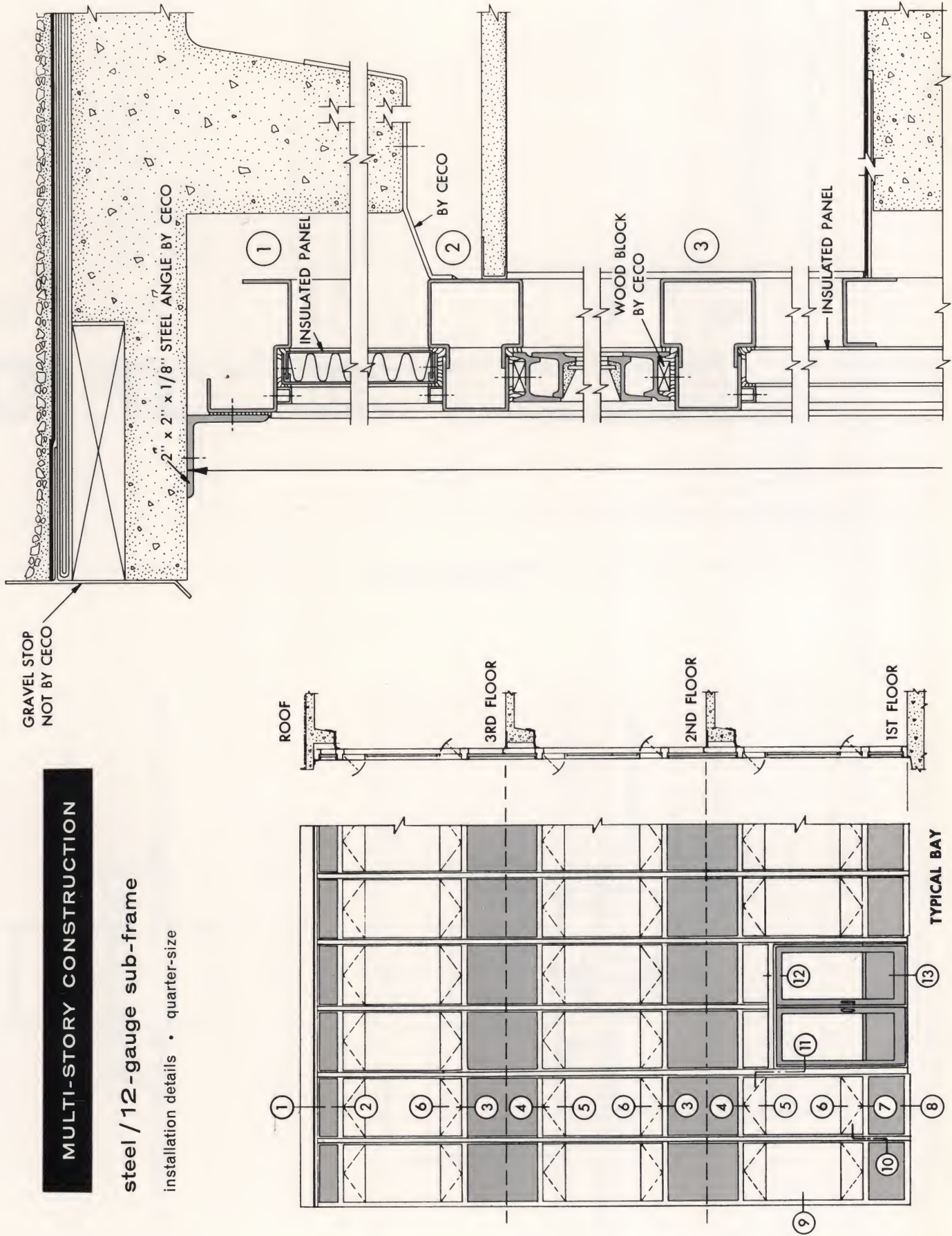


Joints exposed to weather must be sealed with an approved caulking compound.

# **MULTI-STORY CONSTRUCTION**

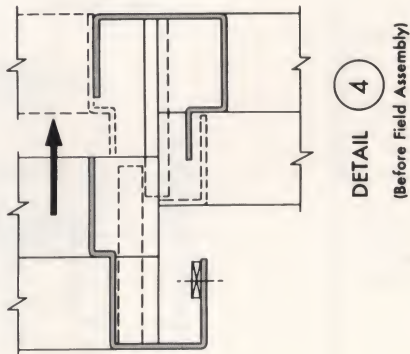
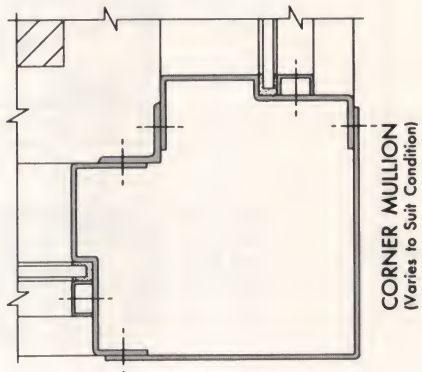
## **steel / 12-gauge sub-frame**

installation details • quarter-size

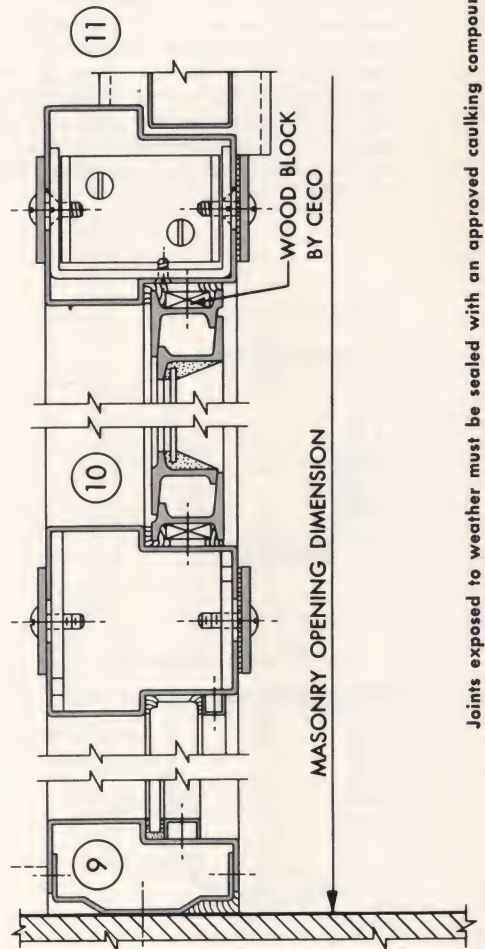
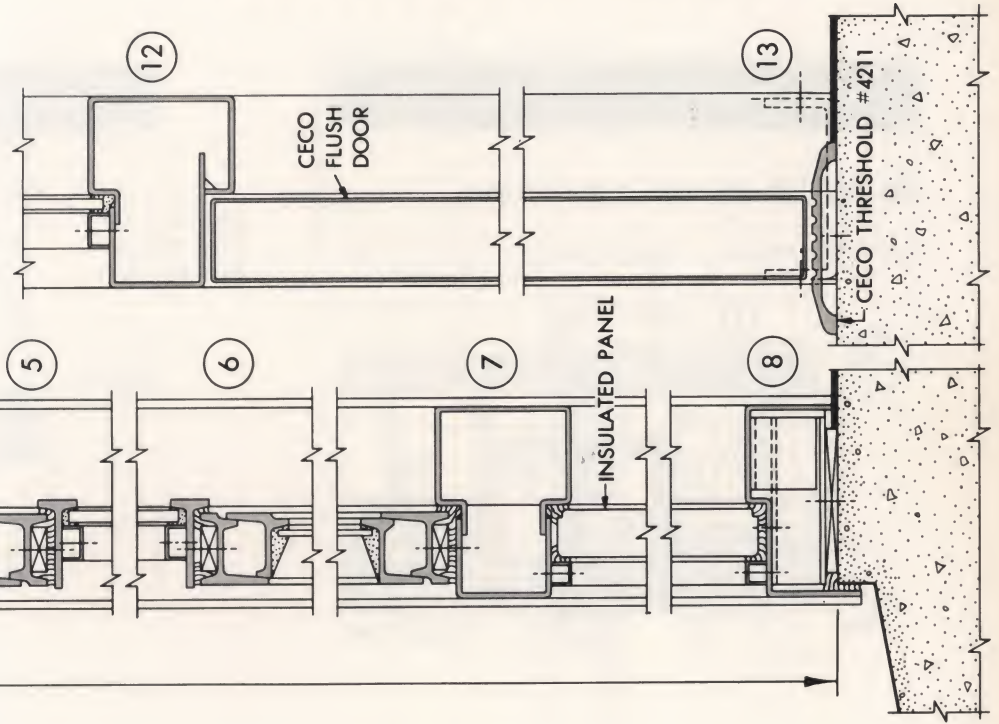




FOR OTHER STEEL MULLIONS AND FOR WIND LOAD DATA, SEE PAGES 36 AND 37. FOR ADDITIONAL ANCHORAGE DETAILS, SEE PAGES 24 AND 25. FOR MISCELLANEOUS HEAD AND SILL DETAILS, SEE PAGE 39.



MASONRY OPENING DIMENSION

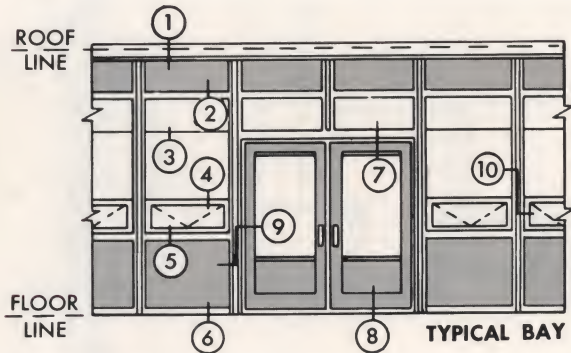


Joints exposed to weather must be sealed with an approved caulking compound.

## ONE-STORY CONSTRUCTION

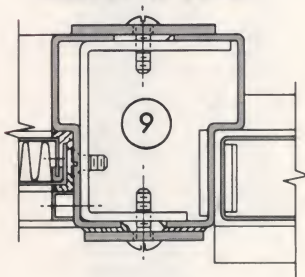
### steel / 12-gauge sub-frame

installation details • quarter-size

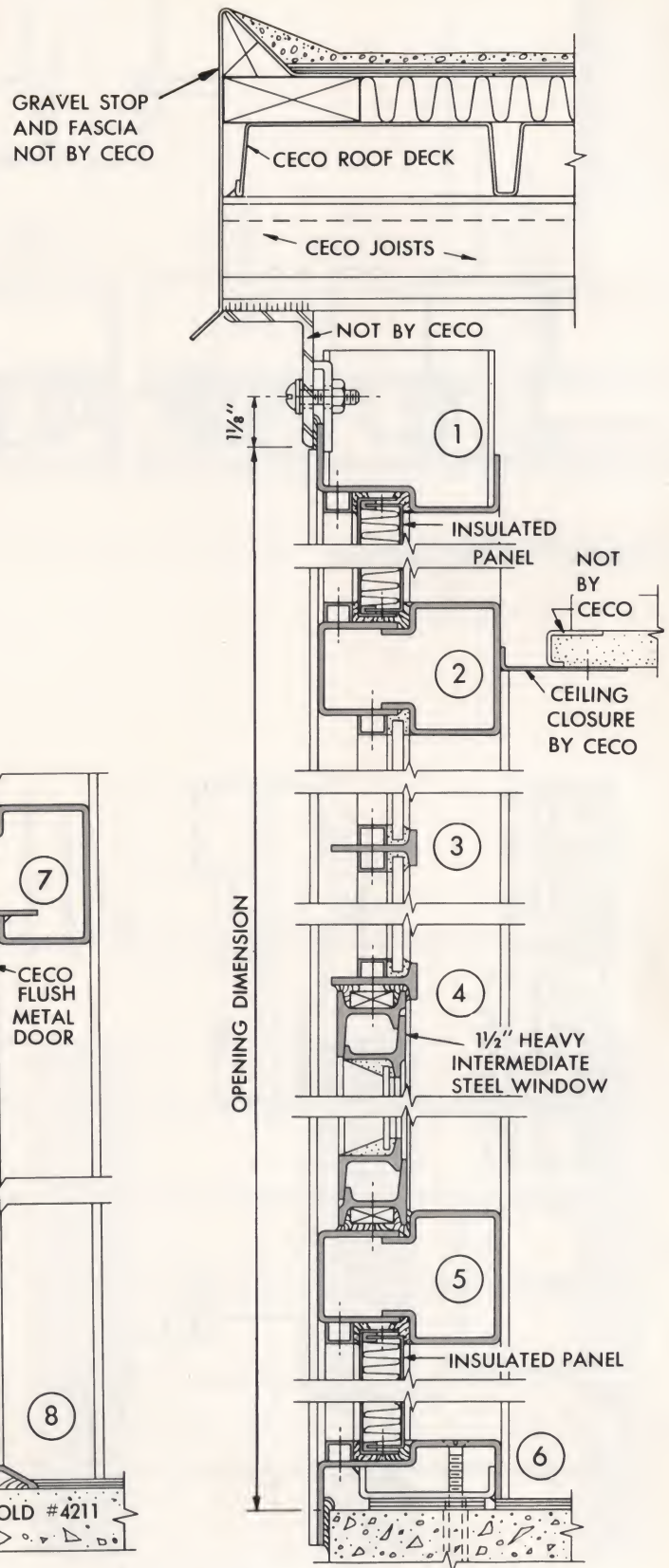
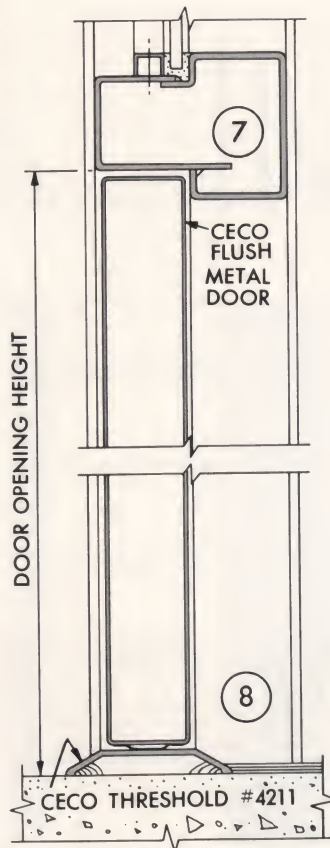
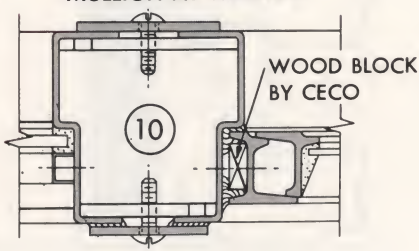


This detail illustrates an economical use of 12-gauge steel sub-frames, which serve as wall framing and set the architectural lines. With this construction, glass is placed directly into the sub-frames, as are the panels, and windows are used only when ventilation is desired. The sub-frames join naturally with the door frames and hollow-metal doors to form a pleasing facade pattern. The contour of the sub-frames may be varied to suit the particular pattern desired. For further information on sub-frames, see Ceco's Steel Window and Screen Catalog No. 1001-S, Section 17 b/Ce.

MULLION AT DOOR



MULLION AT WINDOW



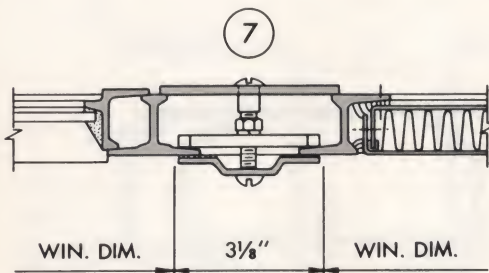
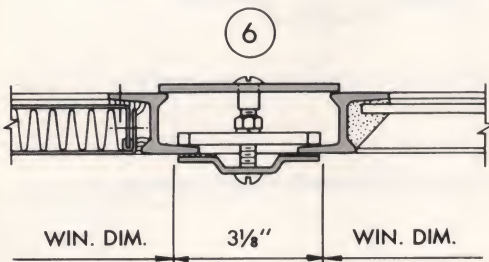
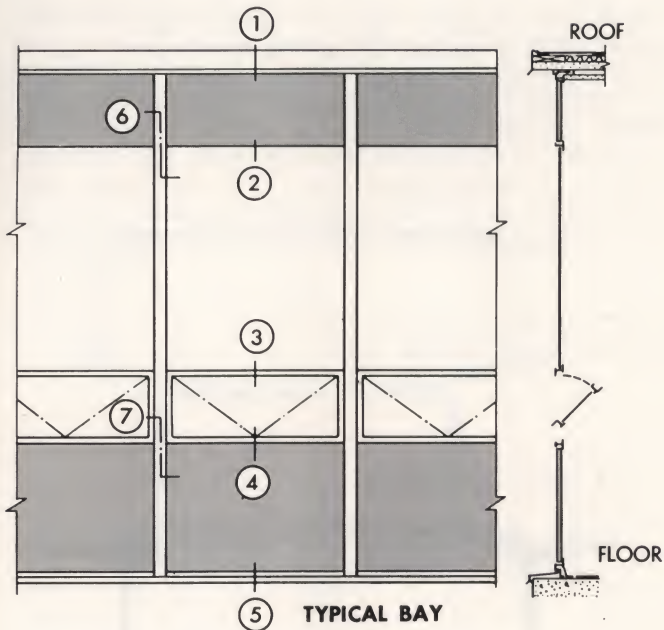
Joints exposed to weather must be sealed with an approved caulking compound.



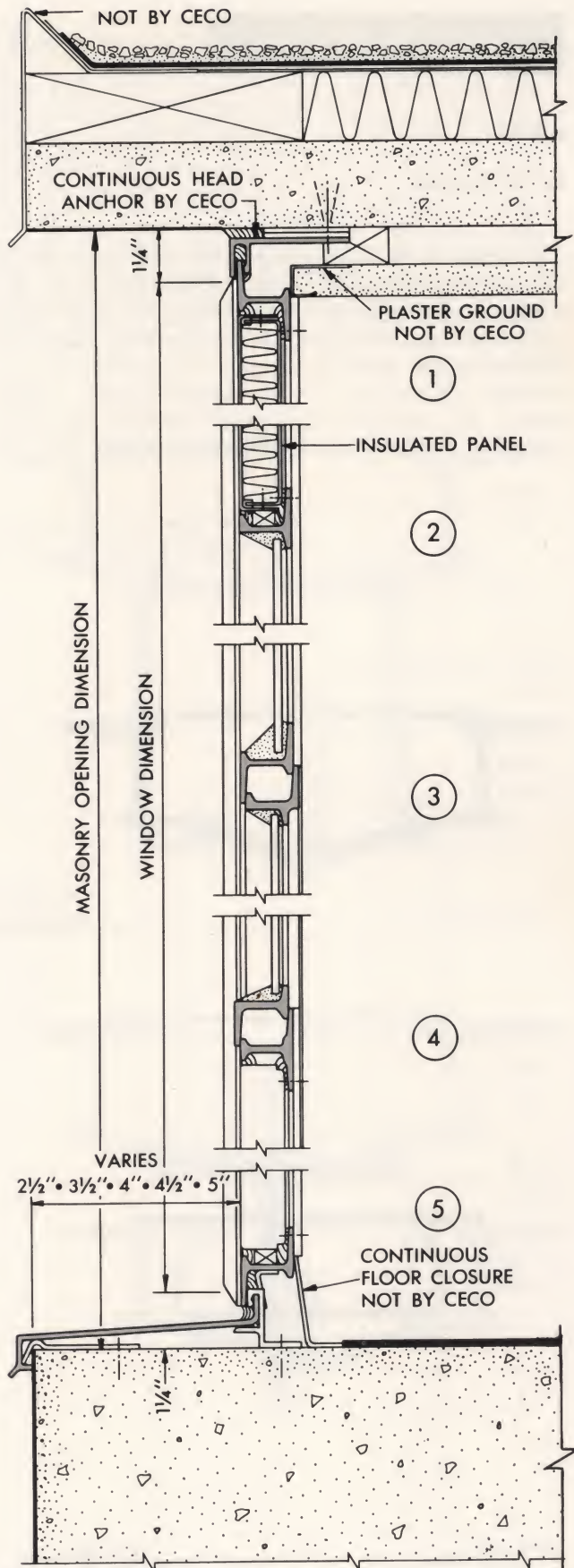
ONE-STORY CONSTRUCTION

steel / 1 1/4" intermediate

installation details • quarter-size



FOR OTHER STEEL MULLIONS AND FOR WIND LOAD DATA, SEE PAGES 36 AND 37. FOR ADDITIONAL ANCHORAGE DETAILS, SEE PAGES 24 AND 25. FOR MISCELLANEOUS HEAD AND SILL DETAILS, SEE PAGE 39.



Joints exposed to weather must be sealed with an approved caulking compound.

## MULLION DETAILS

### steel

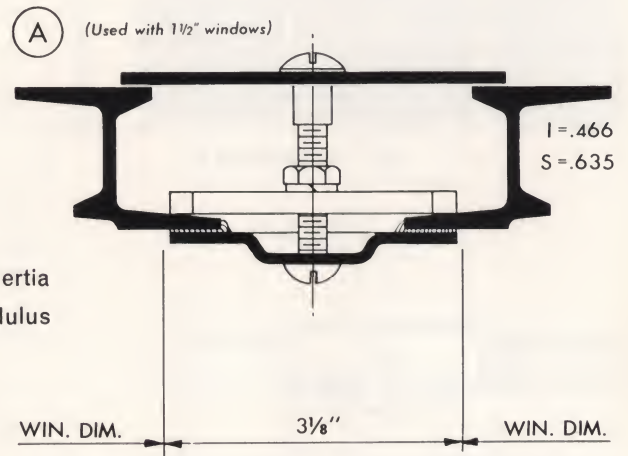
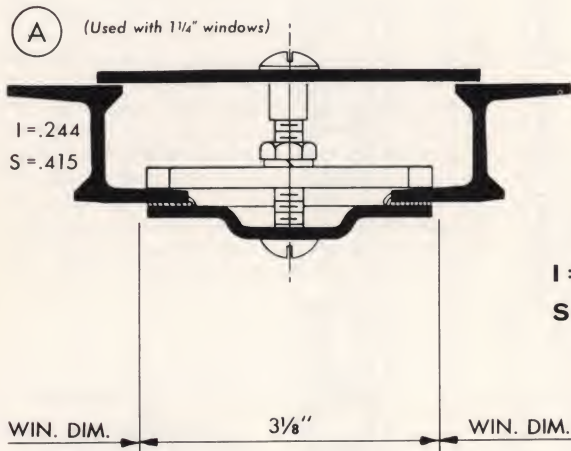
#### half-size sections

The tables on the facing page show safe limits based on a horizontal load of 15 and 20 lbs. per sq. ft. and maximum deflection of  $1/175$  of span. In some areas, 15 lbs. per sq. ft. is adequate for one-story buildings. Mullion heights listed in the tables are established conservative dimensions for the center-to-center widths shown. Any departure from these schedules should be submitted to company engineers for specific job load

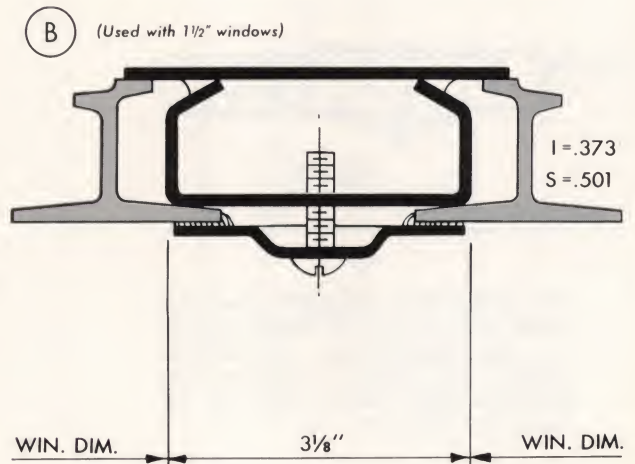
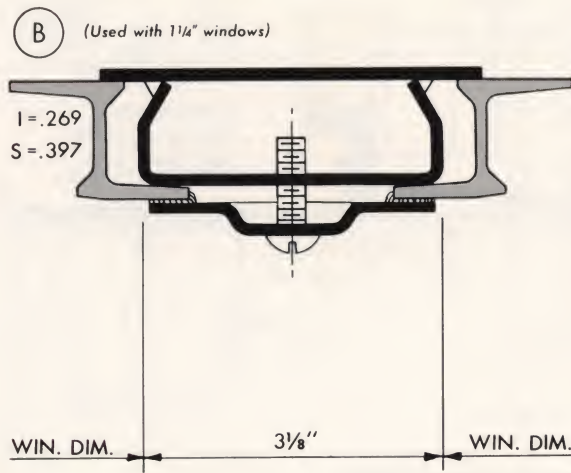
calculations. Heights given in these tables are for single spans unsupported between anchorages.

In using the tables, obtain the moment of inertia (I) and the section modulus (S) for the width and height required. Then select a mullion detail with I and S factors of equal or higher capacity. For instance, mullion C2 accommodates the 12'-0" height and the 4'-0" width at 20 P.S.F. wind load because the C2 I and S are greater than 1.513 and .864, respectively.

Black areas in the details have been used in determining moments of inertia (I) and section modulus (S).



I = Moment of Inertia  
S = Section Modulus

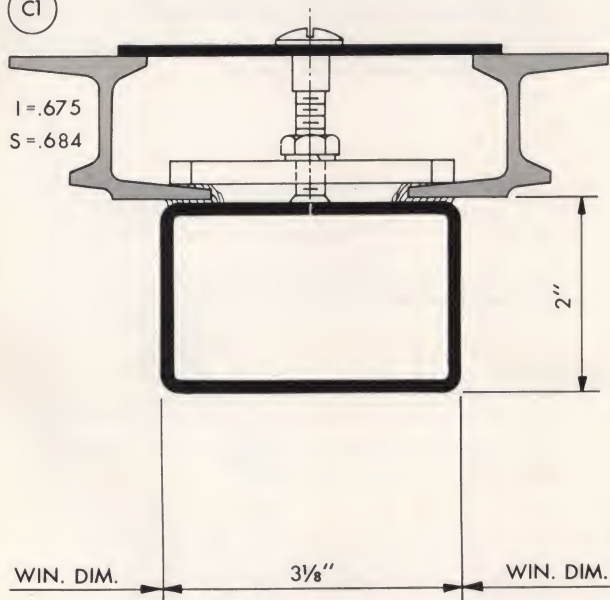




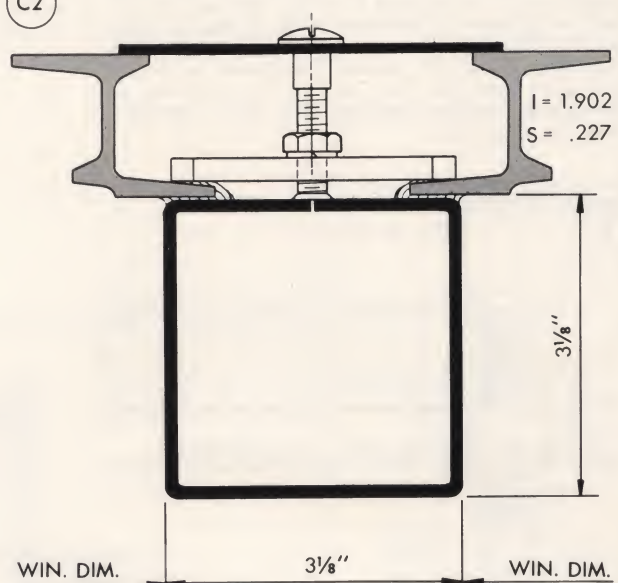
### SAFE LIMITS—STEEL MULLIONS—Rectangular Loading

15 P.S.F. WIND LOAD													20 P.S.F. WIND LOAD												
W.	HT.	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	12'-6"	13'-0"	13'-6"	14'-0"	14'-6"	15'-0"
3'-6"	I	.293	.352	.418	.492	.574	.664	.763	.872	.991	.392	.470	.558	.656	.766	.886	1.019	1.164	1.323	1.496	1.682	1.884	2.101	2.335	2.585
	S	.250	.283	.317	.353	.392	.432	.474	.518	.564	.336	.379	.425	.473	.525	.578	.635	.694	.756	.820	.887	.956	1.029	1.103	1.181
3'-9"	I	.314	.377	.448	.527	.615	.711	.818	.935	1.062	.420	.504	.598	.703	.821	.950	1.092	1.248	1.418	1.603	1.803	2.019	2.252	2.502	2.770
	S	.268	.303	.340	.379	.420	.463	.508	.555	.604	.359	.406	.455	.507	.562	.619	.680	.743	.809	.878	.949	1.024	1.101	1.181	1.264
4'-0"	I	.335	.402	.478	.562	.656	.759	.873	.997	1.133	.448	.537	.638	.750	.876	1.014	1.165	1.332	1.513	1.710	1.924	2.155	2.403	2.670	2.956
	S	.286	.323	.362	.404	.448	.493	.542	.592	.645	.384	.433	.486	.541	.600	.661	.726	.793	.864	.937	1.014	1.093	1.176	1.261	1.350
4'-6"	I	.377	.453	.538	.632	.738	.854	.982	1.122	1.275	.504	.604	.718	.844	.985	1.140	1.311	1.498	1.702	1.923	2.164	2.423	2.702	3.002	3.324
	S	.322	.364	.408	.454	.504	.555	.609	.666	.725	.432	.487	.546	.609	.675	.744	.816	.892	.972	1.054	1.140	1.230	1.323	1.419	1.518
5'-0"	I	.419	.503	.597	.703	.820	.949	1.091	1.247	1.416	.558	.669	.794	.934	1.090	1.261	1.450	1.657	1.883	2.128	2.394	2.681	2.990	3.323	3.678
	S	.358	.404	.453	.505	.560	.617	.677	.740	.806	.480	.541	.607	.676	.750	.826	.907	.991	1.080	1.171	1.267	1.366	1.470	1.576	1.687

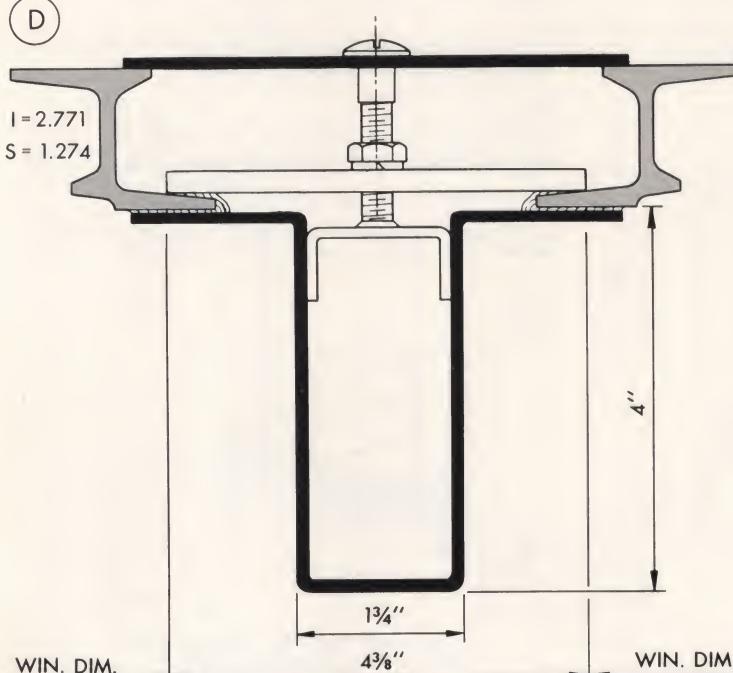
(C1)



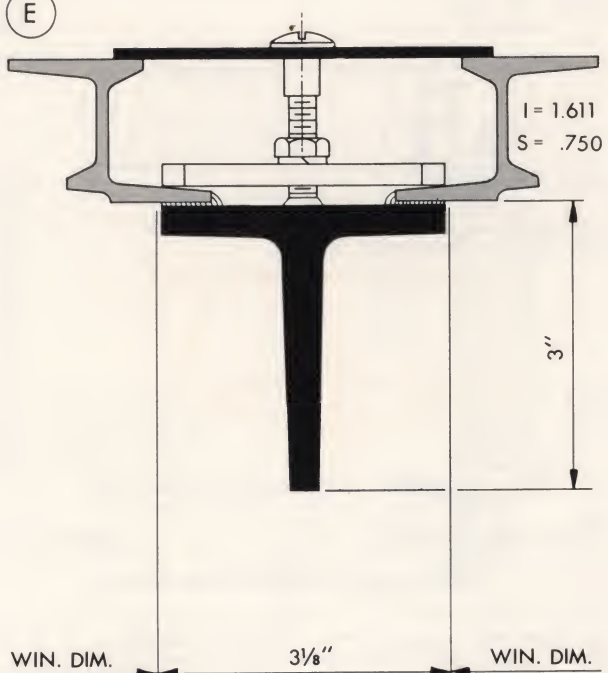
(C2)



(D)



(E)

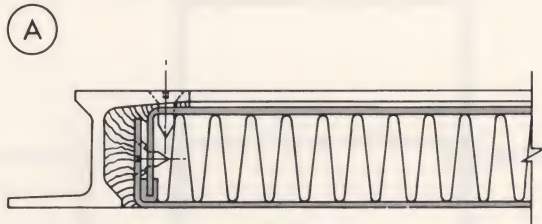


## PANELS

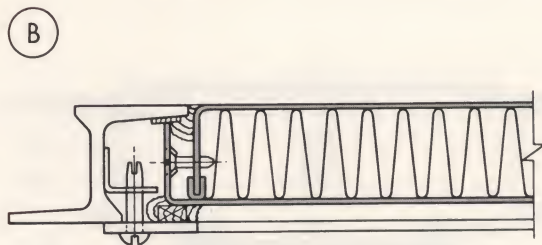
### steel

#### half-size sections

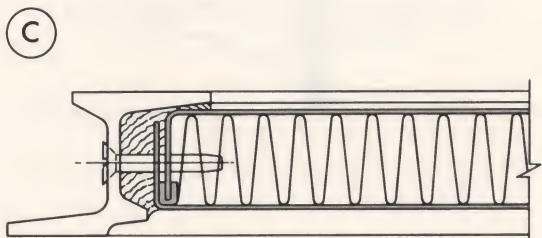
The insulating panels shown here are typical of the many kinds of installations found in modern curtain-wall construction. They range from the box-type to the cement-asbestos-type and ceramic-type, with allowable variations to suit individual curtainwall designs. Sections available include 1½" Heavy-Intermediate, 1¼" Intermediate and Sub-frame types. Consideration should be given to whether the panels are to be installed from the exterior or interior, and necessary provisions made in the construction to allow convenient installation. In multi-story buildings, the interior installation should be considered since workmen can use the floor structure as convenient working platforms. For panel specifications, see page 41.



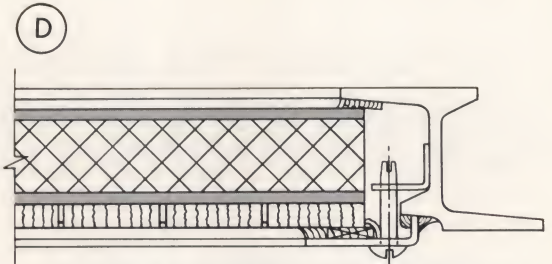
1-1/16" BOX TYPE PANEL USED WITH 1-1/4" INTERMEDIATE STEEL WINDOW—APPLIED FROM EXTERIOR WITH FLANGE SCREWS.



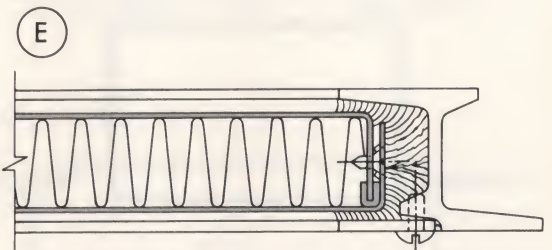
1-1/16" BOX TYPE PANEL USED WITH 1-1/4" INTERMEDIATE STEEL WINDOW—APPLIED FROM EXTERIOR



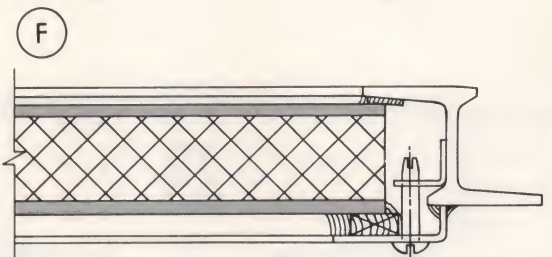
1-1/16" BOX TYPE PANEL USED WITH 1-1/2" HEAVY-INTERMEDIATE STEEL WINDOW—APPLIED FROM EXTERIOR PRIOR TO ERECTION WITH WEB SCREW.



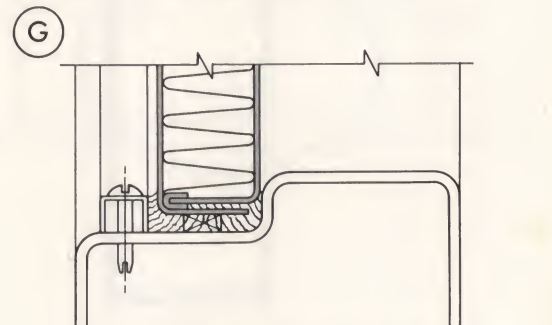
1/4" CERAMIC TILE PANEL USED WITH 1-1/2" HEAVY-INTERMEDIATE STEEL WINDOW—APPLIED FROM EXTERIOR



1-1/16" BOX TYPE PANEL USED WITH 1-1/2" HEAVY-INTERMEDIATE STEEL WINDOW—APPLIED FROM EXTERIOR



1/8" INSULATED CEMENT-ASBESTOS PANEL USED WITH 1/4" INTERMEDIATE STEEL WINDOW—APPLIED FROM EXTERIOR



1-1/16" PANEL USED WITH 12-GAUGE STEEL SUB-FRAME—APPLIED FROM EXTERIOR.



## HEAD AND SILL CONDITIONS

## steel

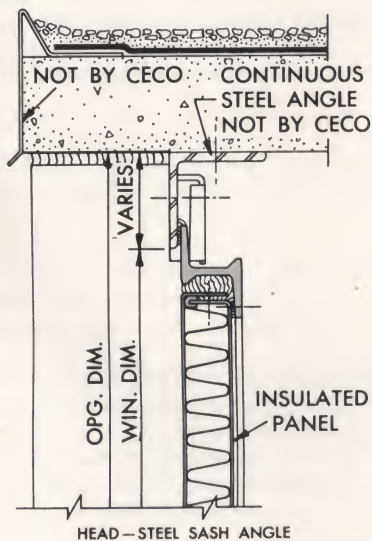
installation details • quarter-size

The head and sill closures shown on these pages are typical of the conditions often encountered in actual construction. As head and sill closures are such an important part of a successful curtainwall, they should receive the same care in design and installation as the vertical mullion anchors. Each building design should be reviewed and analyzed as to conditions encountered and a decision made as to whether the head and sill closures are to be set before or after the mullions and windows. Head and sill conditions are modified to fit each situation. Head

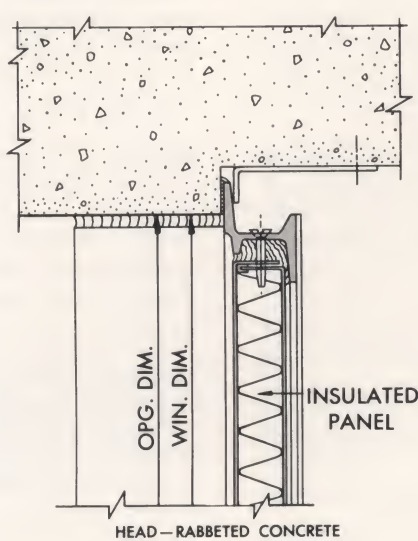
closures are designed to be flexible, with consideration given to two important points—adjustment so the closures can be positioned correctly and provision for vertical expansion of the curtainwall system.

Head and sill closures should be installed in accordance with the curtainwall manufacturer's instructions, because the final position of the closures must be straight, level and in alignment with anchors and sub-sills below. Consult the Ceco district office for further information.

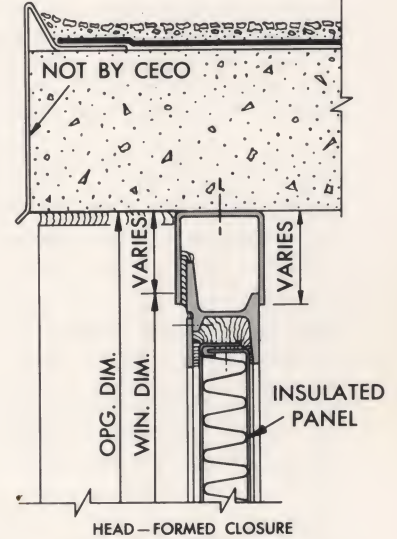
(A)



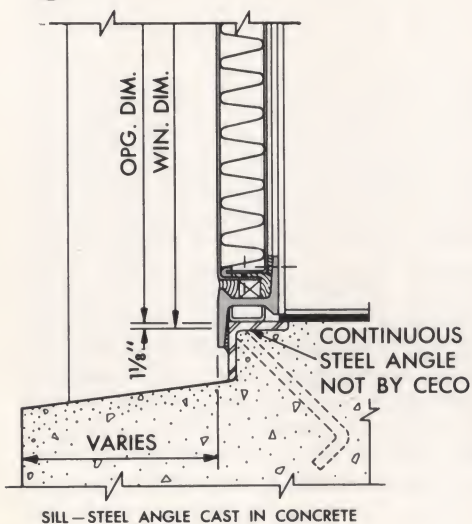
(B)



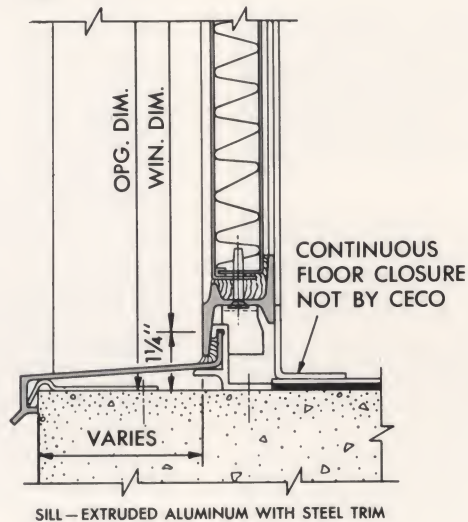
(C)



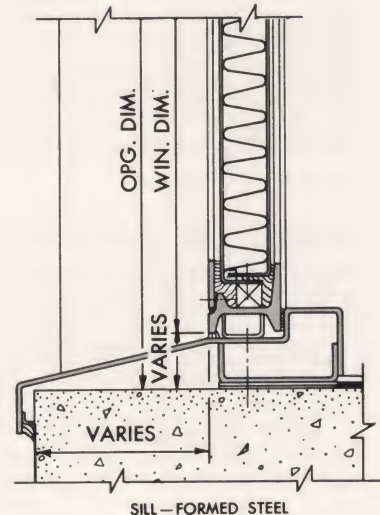
(D)



(E)



(F)





# Specifications

*(Include the following two paragraphs for either Aluminum or Steel Curtainwall construction.)*

**GENERAL**—The curtainwall contractor shall be responsible for the construction and erection of the complete curtainwall. Special care will be taken by the general contractor and the curtainwall manufacturer to assure complete coordination between the manufacturing and field operations.

**SPECIAL CONDITIONS**—It is not the intent to limit bidding of this section by specifying a particular product, but rather to set a standard of quality. Window manufacturers wishing to submit bids on this section will be required to submit a full-size sample to the architect for approval. No verbal approval will be given. All requests for approval must be submitted to the architect at least 48 hours prior to the time of letting. Substitutions or requests for approval will not be considered after award of the general contract.

**SCOPE OF WORK**—*(Include for Aluminum Curtainwall construction, Series 1000, 1100, 200-B, 160 or 165)*—This section includes the specifications for the furnishing and installing of all aluminum windows and the aluminum curtainwall as shown on the architect's plans and as herein specified. Aluminum doors, door frames or entrances are not included in this section. *(Include or omit frames according to design.)*

*(Include for Steel Curtainwall construction)*—This section includes the specifications for the furnishing and installing of all steel windows and the steel curtainwall as shown on the architect's plans and as herein specified. Doors, door frames or entrances are not included in this section.

**DESCRIPTION OF WORK**—*(Include for Aluminum Curtainwall construction, Series 1000 or Series 1100)*—The aluminum curtainwall, Series 1000 . . . or Grid-type Series 1100 . . . *(specify which)*, shall incorporate Series 500 . . . 525 . . . 530 . . . 535 . . . 540 . . . 545 . . . or 550 . . . *(specify which)* aluminum projected window sections, or Series 500 . . . 525 . . . 535 . . . or 545 . . . *(specify which)* aluminum casement window sections, and shall include fixed and ventilating windows, fixed frames, trim, anchors and other component parts, as manufactured by Ceco Steel Products Corporation, and as modified by the plans and/or specifications. *(For Series 200-B, 160 or 165, see catalog 6013-J.)*

*(Include for Steel Curtainwall construction)*—All steel curtainwalls, including fixed and ventilating windows and fixed frames, shall be 1½" Heavy-Intermediate . . . or 1¼" Intermediate *(specify which)* steel sections, and shall include mullions, panels, trim, anchors and other component parts, as manufactured by Ceco Steel Products Corporation and as modified by the plans and/or specifications.

**MATERIAL AND CONSTRUCTION**—*(Include for Aluminum Curtainwall construction, Series 1000 or Series 1100)*—All sections of aluminum curtainwall are to be of aluminum alloy 6063-T5, having a tensile strength of not less than 22,000 p.s.i. The specially extruded Heavy-Intermediate aluminum sections shall have a minimum thickness of not less than ⅛". The ventilator members shall be 1⅝" deep with a minimum thickness of ⅛", except for the hardware rails, which will have a ⅜₁₆" web thickness. Casement ventilator—solid sections to have ⅜₁₆" webs. The weathering lap of all ventilators is to be a full ¼". ¶The corners of the window frames and ventilators shall be coped,

mortise and tenon construction, with welded corners providing rigid and secure connection. The ventilators shall be balanced on two heavy aluminum arms and controlled by two sliding nylon friction shoes with adjustable friction compression springs. Casement ventilators to be hung on heavy extension type hinges. All joints of window portion enclosing the panel shall be especially treated to prevent entrance of water. *(For 200-B, 160 or 165, see catalog 6013-J.)*

*(Include for Aluminum Curtainwall construction, Series 1000)*—The jamb frame members are to be unequal-leg Z-type sections, and the head and sill frame members are to be long equal-leg sections of not less than 1⅝" and/or 1½" from face to back. ¶Vertical mullions for the curtainwall are to be one-piece . . . or two-piece . . . *(specify which)* tubular design as shown on the plans. Mullions are to be designed and prepared for secure anchorage to the structure. Mullions shall be designed to withstand a wind load equivalent to 15 lbs. . . . or 20 lbs. . . . *(specify which)* per square foot. ¶Special aluminum channels shall be provided for inside (or outside) attachment of the insulating panels, and breather holes are to be provided where necessary. The head and sill section and the specially extruded mullions shall provide a minimum of ⅜₁₆" expansion and contraction per story height and the mullions shall have specially extruded sleeves attached to the top of each mullion at approximately the floor levels.

*(Include for Aluminum Curtainwall construction, Series 1100)*—The sub-frame perimeter bars shall be specially designed heavy extruded channel sections 4½" deep; minimum web thickness ⅞₃₂" and ⅛"; glazing rebate height ⅞". Vertical and horizontal extruded tubular sections are to be 1¾" wide, 4½" deep and glazing rebate is to be ⅞" high. The corners of sub-frames shall be coped, mortise and tenon construction, providing rigid and secure connection. Tubular sections shall be coped, and mortised and tenoned to frame; and spigot type construction used where tube to tube occurs. Frames have ¾" outstanding flanges for insertion of "H" type mullion covers to provide for thermal expansion and contraction. The jamb, head and sill frame members of the window inserts are to be equal-leg sections. Window inserts, sheet glass, insulating glass and insulated panels are to be secured outside by continuous removable bead.

*(Include for Steel Curtainwall construction)*—All curtainwall members, exclusive of the insulating panels, shall be hot rolled new billet steel. Frame and ventilator sections shall have weathering-baffles rolled as integral parts of bars to provide parallel double-contact surfaces around the perimeter of the ventilator when closed. Members for 1¼" Intermediate construction are to be modified Z-bar sections with frames and ventilators 1¼" deep . . . or . . . Members for 1½" Heavy-Intermediate construction are to be modified Z-bar sections with frames 1½" deep and ventilators 1⅝" deep *(specify which)*. Frame members shall be of unequal-leg design to provide a minimum of ½" anchorage. The combined weight of frame and ventilator members is not less than 3.0 lbs. for 1¼" Intermediate . . . or 3.6 lbs. for 1½" Heavy-Intermediate . . . *(specify which)* per lineal foot. Mullions shall be designed to withstand a wind load equivalent to 15 lbs. . . . or 20 lbs. *(specify which)* per square foot. Corners of frames and ventilators shall be mitered and electrically welded, and exposed surfaces dressed smooth. Muntins shall be attached to frame or ventilator members by means of mortise and tenon joints, and with cross joints completely interlocked. Projected ventilators shall be balanced on two steel supporting arms com-



pletely concealed when the ventilator is closed. Where curtain-wall units receive insulating panels, special provision shall be made for their secure attachment. Necessary weep holes shall be provided to permit adequate ventilation and drainage of the panel.

**HARDWARE**—(Include for Aluminum Curtainwall construction, Series 1000 or Series 1100)—Hardware for projected windows shall consist of polished white bronze cam handles for both project-in and project-out ventilators. (If required, ventilators can be equipped with underscreen push-bar handles.) Substitute material will not be accepted. When not within reach of the floor, the ventilator shall be pole operated by a spring latch.

(Include for Aluminum Curtainwall Construction Series 1000 Casement Windows)—Suitable hardware shall be provided to securely lock the ventilators. The locking handle and gear type roto operator are to be zinc die cast.

(Include for Steel Curtainwall construction)—Hardware for project-out ventilators shall consist of a solid polished bronze locking handle engaging a bronze strike. (If required, ventilators can be equipped with underscreen push-bar. Specify if desired.) Project-in ventilators, within reach of floor, shall have a solid polished bronze locking handle engaging a concealed keeper. Substitute material will not be accepted. When not within reach of the floor, the ventilator shall be pole operated by a spring latch, engaging a keeper.

**FINISH** — (Include for Aluminum Curtainwall construction, Series 1000 or Series 1100)—All windows, frames, mullions, mullion covers, etc. shall be thoroughly cleaned, caustic etched, and coated with a clear methacrylate lacquer.

(Include for Steel Curtainwall construction)—All steel units, exclusive of the insulating panels, will be treated with Bonderite and receive one coat of gray prime paint baked on at 300° F. for not less than one-half hour.

**ALUMILITE FINISH**—(Include only if Alumilite finish is required on Aluminum Curtainwall construction, Series 1000 or Series 1100)—All windows, mullions, screens and miscellaneous aluminum trim shall be given an Alumilite finish in accordance with the requirements of the Aluminum Company of America's Specification No. 204R1 or No. 251R1.

**SCREENS**—(Include only if screens are required on Aluminum Curtainwall construction, Series 1000 or Series 1100)—Insect screens shall be furnished for windows as indicated on plans or schedules. Screen frames shall be aluminum with standard 18 x 14 mesh aluminum screen cloth. Suitable screen attachment hardware shall be furnished. Project-out ventilators shall have screens for mounting on the inside with a sliding-type wicket to permit easy access to the locking handle. For casements use a fixed screen on inside. (Project-out ventilators for which underscreen push-bar hardware is furnished shall have a flat-type fixed screen for mounting on the inside.) Project-in ventilators shall have a flat-type fixed screen for mounting on the outside, from inside the building.

(Include only if screens are required on Steel Curtainwall construction)—Screens shall be of open frame type designed specially for use with these windows, and arranged for attachment and removal from the inside. Fixed-type screens will be furnished for project-out ventilators with underscreen push-bar, and for project-in ventilators. Hinged wicket-type screens will be furnished for project-out ventilators, cam handle operated. All screens for curtainwall windows have steel frames with bronze wire cloth, 18 x 14 mesh.

(Include all following paragraphs for either Aluminum or Steel Curtainwall construction.)

**WORK NOT INCLUDED**—Structural steel, convector covers, metal stools, back-up walls, glass, glazing, glazing clips, glazing compound, perimeter caulking, furnishing or setting of concrete inserts, and cleaning of wall after erection are not included in this section. Preparation for the attachment or setting of anchoring clips and/or concrete inserts shall be exactly as shown on the manufacturer's shop drawings and shall be the responsibility of the general contractor.

**PANELS**—Panels shall be supplied under this section by the curtainwall manufacturer. All panels shall be installed in frames in accord with curtainwall manufacturer's approved shop drawings to insure a tight installation.

Panels shall be (specify which):

a. Box type 1" or 2" (specify which) in thickness with exterior 16-gauge porcelain face and galvanized and Bonderized 18-gauge inside face. Panel shall have a "U" factor of .20.

b. Ceramic tile with mosaic tile set in random patterns. Panels shall be 1¼" in thickness of laminated construction. Components shall be 22-gauge front and back pan, styrofoam core, and 1" x 1" tile face. "U" value shall be .22.

c. Pan type (non-insulating) manufactured of 14-gauge enameling iron with porcelain enamel exterior face.

(NOTE: All panels can be furnished with Alumilited aluminum exterior face in lieu of porcelain face. If wanted, please specify.)

All porcelain panels shall be manufactured in accord with the Porcelain Enamel Institute's current specifications. Finished facings of panels may have a slight uniform bow or variation from a plane surface, but there shall be no intermediate bends or bows causing rippling.

**SHOP DRAWINGS**—Before proceeding with the manufacture, the curtainwall contractor shall submit complete shop drawings for approval. No work is to be performed until approval of these drawings is granted.

**ERECTION**—The curtainwall is to be erected by the curtainwall sub-contractor or his authorized representative in accord with the approved drawings. This shall include the labor, material, accessories, and supervision necessary to erect the complete curtainwall. The curtainwall shall be set plumb, square and level, and be held securely, in correct vertical and horizontal alignment. All ventilators shall be adjusted before glazing. Joints between the curtainwall and its components shall be sealed with an approved caulking compound furnished and applied by the erector.

**GLAZING**—Windows are designed for outside compound glazing . . . inside bead glazing . . . or outside bead glazing . . . (specify which). Glass, glazing compound and glazing clips are to be furnished by the glazing sub-contractor.

**PROTECTION AND CLEANING**—The general contractor is to be responsible for the protection, prevention of contamination by other trades, and the maintenance of the curtainwall during construction. At the conclusion of construction the general contractor shall perform the final cleaning of the curtainwall to the satisfaction of the architect.



# CECO

## CURTAINWALLS

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### CREDITS

**FRONT COVER** (left) *The Hartford Gas Company (Central Heating & Refrigeration Plant)*, Hartford, Connecticut; Charles Du Bose, architect; F. H. McGraw & Company, contractor. (right) *The Federal Bar Association Building*, Washington, D.C.; Corning, Moore, Elmore & Fisher, architects; Standard Construction Company, Inc., contractor.  
**BACK COVER** (top) *Spot, Rolling Meadows, Illinois*; Ralph Stoetzel, Inc., architect and engineer; Joseph T. Carp, Inc., contractor. (middle) *Charles G. Harrington Elementary School*, Cambridge, Massachusetts; M. A. Dyer Company, architect; John Bowen Company, Inc., contractor. (bottom) *American Sugar Refining Company (Domino)*, Charlestown, Massachusetts; The Betchel Corporation, architects and contractors.

### CECO STEEL PRODUCTS CORPORATION

General Offices:

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